Exhibit 12

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY
TRENTON VICINAGE

ASSOCIATION OF NEW JERSEY RIFLE & PISTOL CLUBS, INC., BLAKE ELLMAN, and MARC WEINBERG, Plaintiffs, v. MATTHEW PLATKIN, in his official capacity as Attorney General of New Jersey, PATRICK J. CALLAHAN, in his official capacity as Superintendent of the New Jersey Division of State Police, RYAN MCNAMEE, in his official capacity as Chief of Police of the Chester Police Department, and JOSEPH MADDEN, in his official capacity as Chief of Police of the Park Ridge Police Department, Defendants.	HON. PETER G. SHERIDAN Civil Action No. 3:18-cv-10507

MARK CHEESEMAN, TIMOTHY CONNELLY, and FIREARMS POLICY COALITION, INC., Plaintiffs, v. MATTHEW J. PLATKIN, in his official capacity as Acting Attorney General of New Jersey, PATRICK J. CALLAHAN, in his official capacity as Superintendent of the New Jersey	HON. RENEE M. BUMB Civil Action No. 1:22-cv-4360

State Police, CHRISTINE A. HOFFMAN, in her official capacity as Acting Gloucester County Prosecutor, and BRADLEY D. BILLHIMER, in his official capacity as Ocean County Prosecutor,

Defendants.

BLAKE ELLMAN, THOMAS R. ROGERS, and ASSOCIATION OF NEW JERSEY RIFLE & PISTOL CLUBS, INC.,

Plaintiffs,

v.

MATTHEW J. PLATKIN, in his official capacity as Attorney General of New Jersey, PATRICK J. CALLAHAN, in his official capacity as Superintendent of the New Jersey Division of State Police, LT. RYAN MCNAMEE, in his official capacity as Officer in Charge of the Chester Police Department, and KENNETH BROWN, JR., in his official capacity as Chief of the Wall Township Police Department,

Defendants.

HON. PETER G. SHERIDAN

Civil Action No. 3:22-cv-04397

DECLARATION OF BRIAN DELAY

I, BRIAN DELAY, hereby depose and state:

1. I am over the age of 18 and am competent to testify to the matters stated below based on personal knowledge.

2. I have attached a copy of an expert report I have prepared, together with a copy of my Curriculum Vitae (attached as Exhibit A of my expert report). The opinions expressed in this report are based on my knowledge, skill, experience, training, and education, and I hold these opinions to a reasonable degree of professional certainty. I hereby adopt and incorporate my report in this declaration as if set forth in full.

I declare under penalty of perjury on this 20 day of October, 2023, that the foregoing is true and correct.

Brian DeLay

BRIAN DELAY

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

ASSOCIATION OF NEW JERSEY RIFLE & PISTOL CLUBS, INC., et al., Plaintiffs, v. PLATKIN, et al., Defendants.	Civil Action No. 3:18-cv-10507
CHEESEMAN, et al., Plaintiffs, v. PLATKIN, et al., Defendants.	Civil Action No. 1:22-cv-4360
ELLMAN, et al., Plaintiffs, v. PLATKIN, et al., Defendants.	Civil Action No. 3:22-cv-04397

Rebuttal Expert Report of Brian DeLay

I, Brian DeLay, the undersigned, declare as follows:

BACKGROUND AND QUALIFICATIONS

1. I am an Associate Professor of History and the Preston Hotchkis Chair in the History of the United States at the University of California, Berkeley. I received my B.A. from the University of Colorado, Boulder (1994), and my M.A. (1998) and Ph.D. (2004) from Harvard University. My first book, *War of a Thousand Deserts: Indian Raids and the U.S.-Mexican War* (Yale University Press, 2008), underwent blind peer-review before publication and won best book prizes from several scholarly organizations. Since 2008, I have been working on three interrelated projects about the historic arms trade: a monograph about the arms trade in the era of American Revolutions (under contract with W.W. Norton and scheduled to be published in 2025); a second monograph about guns, freedom, and domination in the Americas from 1800-1945 (also under contract with W.W. Norton); and a database tracking the global trade in arms and ammunition between the end of the Napoleonic Wars and start of World War I. These projects are grounded in primary-source research in archives in the United States, England, Spain, and Mexico.

2. I have delivered around three dozen invited presentations on firearms history at academic conferences and universities in the U.S. and abroad, including Harvard University, the University of Chicago, Stanford University, Oxford University, Cambridge University, the University of Melbourne, Doshisha University in Kyoto, Japan, and the Zentrum für Interdisziplinäre Forschung (ZIF), in Bielefeld, Germany. I have given a number of interviews on the history of firearms and the gun business for the British Broadcasting Service (BBC), as well as for the Australian Broadcasting Corporation (ABC), and public radio stations in the United States. In September 2023, my 21,000-word article "The Arms Trade & American Revolutions" will be featured in the *American Historical*

Review, the flagship journal of the history profession. In addition to scrutiny from the journal's editor and members of the board of editors (all prominent academic historians), this article underwent two rounds of double-blind peer review where it was critiqued by seven experts in the field before being accepted for publication. This will be my second article published in the *AHR*.

3. My research on the history of firearms has been supported by grants from the American Philosophical Society, the British Academy, the American Council of Learned Societies (twice), and the Stanford Humanities Center, among other organizations. In 2019, I was awarded a Guggenheim fellowship.

4. In addition to my work on this case, I've served as an expert witness in *Hanson v. District of Columbia*, 22-cv-02256 (D.D.C.); *Arnold v. Tina Kotek, et al*., No. 22CV41008 (Harney Cty. Cir. Ct.); *Oregon Firearms Federation, et al., v. Tina Kotek, et. al.*, 22-cv-01815 (D. Ore.)[1]; *Harrel v. Raoul*, 23-cv-141-SPM (S.D. Ill.); *Langley v. Kelly*, 23-cv-192-NJR (S.D. Ill.); *Barnett v. Raoul*, 23-cv-209-RJD (S.D. Ill.); *Federal Firearms Licensees of Illinois v. Pritzker*, 23-cv-215-NJR (S.D. Ill.); *Herrera v. Raoul*, 23-cv-532 (N.D. Ill.); *Kenneally v. Raoul, et al.*, 23-cv-50039 (N.D. Ill.); *William Wiese, et al., v. Rob Bonta, et al.,* 2:17-cv-00903 (E.D. Cal); *Gabriella Sullivan, et al., v. Bob Ferguson, et al.*, 3:22-cv-05403 (W.D. Wash); and *Rocky Mountain Gun Owners et al., v. The Town of Superior et al*., 22-cv-2680 (D. Col.) A true and correct copy of my curriculum vitae is attached as Exhibit A to this report. I am being compensated at a rate of $250/hour.

SUMMARY OF OPINIONS

[1] *Oregon Firearms Federation et al., v. Tina Kotek et. al.*, has been consolidated with three other actions: *Fitz v. Rosenblum et al.*, 3:22-cv-01859 (D. Ore.), *Eyre v. Rosenblum et al.*, 3:22-cv-01862 (D. Ore.), and *Azzopardi v. Rosenblum et al.*, 3:22-cv-01869 (D. Ore.).

5. In order to respond to the report submitted on behalf of the plaintiffs by Ashley Hlebinsky on June 16, 2023 (hereinafter "Hlebinsky Report"), I have been asked to provide my understanding of the history and regulation of firearms in the United States, with an emphasis on repeating firearms and the years surrounding 1791 and 1868. My most important conclusions are easy to summarize. Despite centuries of experimentation, repeating arms remained flawed curios when the Second Amendment was ratified, and were exceedingly rare in the United States. I am unaware of a repeating arm ever being used in combat or for personal self-defense in the U.S. prior to the nineteenth century. By the time reliable repeating firearms began entering the consumer market, all of the men who signed the U.S. Constitution were dead, save James Madison (who passed away a few months after Samuel Colt secured a U.S. patent for his new revolver). These new repeating firearms represented dramatic technological changes, changes that provoked unprecedented social concerns. Legislatures across the nation responded to these concerns with new regulations.

6. Reliable repeating firearms with capacities greater than ten rounds only became available in the 1860s, and only accounted for less than 0.002% of the nation's firearms when the Fourteenth Amendment was ratified. Even these impressive new weapons were different from those at issue in the current case, in one very critical regard: they were slow to load. Semi-automatic firearms with detachable magazines that allow shooters to fire continuously with only brief pauses to reload first began making inroads among U.S. consumers in the early twentieth century. Once again, dramatic technological change provoked unprecedented social concern, leading to a wave of regulatory legislation across the country.

7. My report responds to the June 16, 2023 report of Ashley Hlebinsky and is organized into four main sections. Section I explains why repeating firearms were merely

experimental and, consequently, vanishingly rare in the United States in 1791, and discusses the extent of firearms regulation in America leading up to 1791. Section II describes how reliable repeating firearms with fixed magazines holding more than 10 rounds first came on the market in the 1860s and how they still accounted for a miniscule percentage of total guns in the U.S. in 1868. Section III explains that automatic and semiautomatic firearms with removable large-capacity magazines began coming under state and federal regulation soon after they first became commercially available throughout the United States in the 1920s and 1930s. Finally, Section IV corrects other errors of fact and interpretation in Ms. Hlebinsky's report regarding differences between military and civilian firearms.

I. Repeating Firearms Were Flawed, Experimental Curiosities in 1791

8. Ms. Hlebinsky observes correctly that gunsmiths began experimenting with repeat-fire weapons hundreds of years ago, but her report obscures the degree to which these weapons remained unreliable and/or niche luxury items prior to the nineteenth century. Inventive gunsmiths had been trying to design dependable, effective firearms capable of shooting multiple rounds without reloading since at least the sixteenth century. Evidence for their efforts can be found in personal and public archives, in patent records, and occasionally in actual weapons still preserved in museums and private collections today. But such weapons were flawed, experimental curiosities prior to the founding of the United States. They were both dangerous (to the shooter, as well as to the target) and highly unusual. Most of these weapons never advanced beyond proof of concept. Only a small minority of repeating firearm inventions ever moved past the design or prototype stage, and none achieved commercial significance or military relevance prior to 1791. This centuries-long history of inventive failure has a context, one that ought to be borne in mind when evaluating claims about the historic regulation of firearms—or lack thereof.

A. The elusive quest for reliable repeating firearms prior to the nineteenth century

9. Europeans began engaging with gunpowder and its potential military applications in the thirteenth century. By then, European states had long been in competition with one another for military and economic advantage. As the design and efficacy of artillery, bombs, and handheld firearms improved, and as these improvements forced leaders to reconsider venerable military traditions, states began spending more and more on their militaries. Intensifying competition between sovereigns created powerful incentives for craftspeople and inventors to improve on existing military technology.[2]

10. Sovereign competition helped fueled innovation. Three of the most important innovations in the seventeenth and eighteenth centuries were: (a) gradual improvements in gunpowder corning, a process that made powder burn more evenly and enabled producers to better modulate its power; (b) the substitution of the cumbersome matchlock ignition system for the more reliable flintlock system in the late seventeenth century; and (c) the development of the socket bayonet (also in the late seventeenth century), which, for the first time, enabled infantry to act both as musketeers and pikemen. All three breakthroughs had significant consequences for the development and use of firearms around the world.[3] Still, most improvements to firearms technology were incremental during the Renaissance and early modern era. Meaningful breakthroughs were very rare.

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[2] Geoffrey Parker, *The Military Revolution: Military Innovation and the Rise of the West, 1500-1800*, 2nd ed. (Cambridge University Press, 1996).

[3] These and other developments are clearly described in Bert S. Hall, *Weapons and Warfare in Renaissance Europe: Gunpowder, Technology, and Tactics* (Johns Hopkins University Press, 1997).

11. Because of the military benefits associated with repeat fire (including increased killing potential), it was probably the most coveted but elusive of the gun-making world's aspirations. Safe and reliable increased rate of fire would have been an invaluable force multiplier for militaries before the nineteenth century. States would have paid handsomely to acquire such a comparative advantage, and that prospect incentivized centuries of experimentation. Four basic solutions had come into view as early as the sixteenth century. Each attracted generations of talented gunsmiths, and each had distinct virtues and limitations. The first solution achieved repeat fire with a revolving breech; one innovative design along these lines emerged in Germany in the early sixteenth century. The second approach employed multiple barrels. A seventeenth-century Scot built a gun with a single, fixed breech and fifty barrels arrayed around an axis, for instance. A third design incorporated an internal magazine housing enough powder and (sometimes) balls for multiple shots. Most such arms employed a rotating breechblock to cycle a single powder charge and (sometimes) a single ball into the chamber, before sealing the chamber for firing.[4]

12. The fourth approach, the so-called superposed load or stacked charge method, fired multiple rounds loaded into a single barrel. This was probably the earliest method for achieving repeat fire, and it had two basic types. The first functioned like a roman candle. Lead balls would be drilled through, like beads. Their central canal would be filled with gunpowder or another, slower- burning compound. A regular gunpowder load would then be

[4] M. L. Brown, *Firearms in Colonial America: The Impact on History and Technology, 1492-1792* (Washington: Smithsonian Institution Press, 1980), 50 (Germany), 100 (Scotland). Of early magazine repeaters, a respected authority says "as all were basically impractical and many quite hazardous to use they were produced in extremely limited quantities and hence all are considered great collector's prizes." Norm Flayderman, *Flayderman's Guide to Antique American Firearms and Their Values*, Ninth edition (Iola, WI: Gun Digest Books, 2007), 691.

packed into the barrel of the gun, followed by one of the tightly-fitting pierced rounds, then more gunpowder, then another pierced round, and so on, the loader being exceedingly careful to perfectly align the canals of the individual rounds. Upon firing, the first round (the one closest to the muzzle, would ignite the material inside the bore of the second round, which, a fraction of a second later, would communicate flame to the second powder charge (behind the second pierced ball), and so on, until all shots had left the gun. The second type of superposed load design also employed a barrel loaded with multiple rounds, but allowed the shooter more control over the pace of firing. This was achieved either through the use of multiple locks or of a sliding lock that would enable the user to fire the load in two or more different bursts.[5]

13. Master gunsmiths made exquisite varieties of repeating arms from the sixteenth through the eighteenth centuries, at high cost. Designs with rotating breeches or multiple barrels seldom exceeded a ten-round capacity, but early magazine or superposed firearms could. Regardless of type, gunmakers often decorated multi-fire weapons lavishly, and sold or gifted them to a tiny stratum of elite consumers across Europe. But most of these weapons remained gorgeous curiosities, usually more suited to admire than to shoot. Prized more than used, early repeating firearms survive at far, far higher rates than do the era's ordinary, single-shot firearms that did actual work in the world. While produced in very small quantities annually, therefore, they accumulated over the centuries of production so that today the world's museums and collectors possess many intriguing specimens. Writing about early

[5] Lewis Winant, *Firearms Curiosa* (New York: Greenberg Publisher, 1955), 166-93. For discussion of some particularly ingenious superposed load designs, see M. L. Brown, *Firearms in Colonial America: The Impact on History and Technology, 1492-1792* (Washington: Smithsonian Institution Press, 1980), 104–6.

magazine arms, W. W. Greener, one of the nineteenth century's preeminent authorities on firearms, remarked that "the peculiar complication of the various mechanisms, and the general inutility of the weapons themselves, render a detailed description of little value to the inventor or the general reader; but the connoisseur will find several varieties in the Paris Museum."[6]

14. Notwithstanding often brilliant work, then, no repeating firearm design functioned well enough to become militarily and commercially significant before the nineteenth century. Ms. Hlebinsky seems to believe that militaries scorned repeating firearms because of "tactics, government bureaucracy, and expense." (Hlebinsky Report, p. 15). Those issues mattered, but were not remotely as important as the fact that these weapons were unreliable prior to the nineteenth century. If early repeating arms had worked well, militaries had all of the incentives they needed to adjust tactics, bureaucracy, and budgets to incorporate them. But the ideas behind repeating firearms were simply too far ahead of their times. Greener put it this way: "The advantages of the repeating principle thus appear to have been observed at an early date, and the inventive genius of the gun-maker would have been equal to producing weapons of the desired type if only the skill and tools of the workman had allowed of a perfect mechanically fitting joint being obtained."[7] Most rotating breech mechanisms were complex and exceedingly difficult to make well before moving parts could be built with machine precision. Long-guns festooned with several barrels were too heavy and cumbersome to be practical handheld weapons. Early magazine guns demanded an even higher level of craftsmanship in order to create a perfect seal between the rotating breechblock

[6] W. W. Greener, *The Gun and Its Development*, 9th ed. (London: Cassell and Company, LTD, 1910), 81.

[7] *Id*., 80.

and the stored powder, lest the combustion in the chamber ignite the magazine. The best, like those made by the Florentine Michele Lorenzoni in the late seventeenth and early eighteenth centuries, minimized these dangers through slow, precise craftsmanship. But early magazine guns were perilous even in the hands of expert gunmakers. Lorenzoni's countryman, the famed gunmaker Bartolomo Girardoni, reportedly lost his left hand in a magazine explosion.[8]

15. As for muskets with superposed loads, they were mechanically simpler than the alternatives. But roman-candle style bursts of fire had limited utility on the battlefield and no utility off of it. Worse, like all but the best-made magazine arms, superposed load systems were notoriously perilous to the shooter on account of having so much explosive gunpowder packed into a single firearm. If the sequencing between rounds was off, the barrel could explode like a tubular grenade in the shooter's hands. Hence one scholar's conclusion that "the dread of misfires was reason enough for the lack of sustained enthusiasm for any of the superposed load guns."[9] Still, if more reasons were needed, smoke was another one. In the gunpowder era, even regular, single-shot muskets produced clouds of acrid white smoke that obscured battlefield targets. Firing a superposed load just once made that problem five, ten, or twenty times worse (depending on the number of loads). Superposed load firearms were painfully slow to load, with the practical consequence that a shooter could only expect to fire one barrel full of rounds before having to abandon the weapon during battle. The final major drawback to most superposed load designs was that even when everything went according to plan, the shooter had little or no control over the pace of firing. All he could do was point the

[8] For Girardoni's accident, see Eldon G. Wolff, *Air Guns*, Milwaukee Public Museum Publications in History 1 (Milwaukee, WI: North American Press, 1968), 27.

[9] Winant, *Firearms Curiosa*, 178.

gun, say a prayer, brace himself for an epic recoil, pull the trigger once, and hope that the eight or ten or twenty charges inside the barrel went in the right direction. Such weapons had little utility outside of formal warfare, and their dangerous drawbacks meant that they were seldom used in martial combat, either. Lewis Winant, an authority on historic firearms from the mid-twentieth century, put it well when he wrote that "of all the ideas for producing multishot firearms the scheme of superimposing loads in one barrel is probably the oldest, the most discredited, the most frequently recurring, and also the most readily accepted as new."[10]

16. Few early repeating arms have provoked as much modern interest as the "Puckle gun," a weapon which exemplifies both just how strange and flawed most examples of early repeaters really were. Elaborating on what by the early eighteenth century were established rotating breech designs, Puckle devised a clever multi-fire, flintlock ignition gun. It consisted of a long barrel mounted to a tripod, and three removable, rotating breeches. Each of the three breeches had different purposes. One was designed for shooting "grenadoes," by which Puckle apparently meant shrapnel; one fired standard round balls; and one fired shots cast in the shape of ice-cubes. Puckle intended the balls to be used on Christians, and the cubes to be used against Muslim Turks. Needless to say, this was a design that privileged mystical sectarian posturing over battlefield effectiveness (and aerodynamism). The bulky gun required at least two men to carry and position, making it more like light artillery than a handheld firearm. Sometimes misleadingly billed as the first machine-gun, Puckle's exotic firearm was not self-loading – the user had to reposition the breech with a hand crank in-between each round. Compared to actual machine guns, it had a glacial rate of fire. Once it had discharged its seven cube-loads, for example, the breech had

[10] Winant, *Firearms Curiosa*, 166.

to be removed; each chamber had to be re-loaded with powder, wadding, and shot; the breech had to be carefully re-attached to the gun; and the touch-hole of each chamber had to be re-primed as it came into position prior to each shot. Under serene conditions, a practiced operator might have been able to fire all seven cube-shots in a chamber in under a minute. But given that an average soldier fired two or three shots a minute from a smoothbore musket, the Puckle Gun hardly represented a revolution in firearms technology.

17. And that modest assessment assumes that the firearm reliably worked. Charles Ffoulkes, the researcher who re-discovered the Puckle Gun in 1936, had his doubts. Like all rotating breech designs made before the Industrial Revolution, the breech of the Puckle Gun could not be fully gas-proof. In fact, Ffoulkes found the design even more faulty than others with rotating breeches, because the closeness of the chambers heightened the risk of a chain-fire (one charge prematurely igniting the others). The British military seems to have shared Ffoulkes' skepticism. The inventor formed a company to raise investment around his gun, but it never got off the ground. "Fear not, my friends, this terrible machine," quipped one wry contemporary, "they're only wounded who have shares therein."[11]

18. To be fair to James Puckle, the fundamental material and technological hurdles were beyond anyone's solving in the eighteenth century. To be durable, reliable, affordable, and safe enough to achieve popularity, the experimental designs required metallurgical techniques and a level of machine precision unknown until well into the nineteenth century. Not until the advent of these and other breakthroughs (including the

[11] Charles Ffoulkes, *Arms and Armament*, 1945, 82–85. Quote is from W. Y. Carman, *A History of Firearms: From Earliest Times to 1914* (Mineola, N.Y.: Dover Publications, 2004), 80. Final quote from Winant, *Firearms Curiosa*, 221.

adoption of percussion-cap ignition in the 1830s and metallic cartridges in the 1850s) could repeating firearms become practical weapons of mass production, widespread military adoption, and commercial viability.[12]

19. Neither hustling arms inventors looking to make a fortune nor military and political leaders hunting for battlefield advantage knew that, of course. Hope sprung eternal, on both sides. That is why numerous historic designs for repeating firearms exist, despite the technical and material limitations that prevented any of them from achieving commercial or military relevance.

B. Repeating arms in the colonies and early United States

20. Advances in repeating firearm technology arose in Europe prior to the nineteenth century, and most of these rare weapons stayed in Europe. Very occasionally, however, repeating firearms appear in the documentary record of early America. Ms. Hlebinsky mentions a firearm associated with a gunsmith in Boston named James Pim. (Hlebinsky Report, p. 23). Pim appears to have been an Englishman who had been trained in the rarified tradition of producing repeat fire weapons for elite consumers before emigrating to Massachusetts in the early eighteenth century.[13] A later nineteenth century account claims that in the early 1720s colonial authorities had entertained an Iroquois delegation "with the sight of a curious gun, made by Mr. Pim of Boston – a curious piece of workmanship, --

[12] For a summary of the basic technological hurdles and how they were finally overcome in the nineteenth century, see Joseph Bradley, *Guns for the Tsar: American Technology and the Small Arms Industry in Nineteenth-Century Russia* (DeKalb, Ill.: Northern Illinois University Press, 1990), 12–19.

[13] See Brown, *Firearms in Colonial America*, 255.

which though loaded but once, yet was discharged eleven times following."[14] Ms. Hlebinsky attributes a different repeating arm to another Boston gunsmith, named Samuel Miller. But if we follow the citations to the primary source, an advertisement placed in the New England Weekly Journal, it becomes clear that Miller was probably Pim's apprentice and was still living in the elder gunmaker's house soon after Pim died. Miller advertised "a Gun with one Barrel and Lock, that will discharge twenty Balls at once Loading." Interested parties were invited to "view the Same for Nine pence, and see it discharged paying Two Shillings a shot."[15] It is likely that guns mentioned in both sources were superposed load firearms, and it is entirely possible that they were one and the same weapon. Either way, it is notable that in neither case were repeating firearms being offered for sale, used for self-defense, or employed in combat. Instead, they were curious showpieces, designed to draw and wow a crowd.

21. Another of Ms. Hlebinsky's examples from early America comes from 1756, when gunmaker John Cookson advertised a nine-shot magazine firearm for sale in Boston that he seems to have built in the Lorenzoni style.[16] The most recent scholarship on Cookson concludes that he was a skilled gunsmith from England who emigrated to Boston at the end of the seventeenth century. Finding little demand in the colonies for the high-end custom guns he had been trained to make, he embarked on a heterogenous career as a merchant, chimney sweep, and, occasionally, gunsmith. A few guns with his name survive in London,

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[14] *See* Samuel Niles, *A Summary Historical Narrative of the Wars of New England*, *in Collections of the Massachusetts Historical Society*, Vol. 5 (4th Series 1861), 347.

[15] *New England Weekly Journal*, (Mar. 2, 1730).

[16] Cookson's advertisement appeared in the *Boston Gazette*, April 12, 1756.

and they are very skillfully done.[17] But Cookson does not seem to have continued making magazine firearms in America. The advertisement in question is for a single gun, and my search of period newspapers suggests he placed no other such advertisements during his lifetime.[18] In his eighties by 1756, he seems to have decided to finally sell his prized magazine arm that he had made in England in his youth, had brought with him to America, and had kept all these years.[19] In other words, Cookson's gun wasn't an example of American-made repeating arms, much less an indication of a craft industry of building and selling such arms in Boston. Instead, it was a unique memento of the calling Cookson had left behind in England.

22. The Pim/Miller and Cookson repeaters appeared in the early eighteenth century. Examples from the founding generation are necessary to substantiate Ms. Hlebinsky claim "that numerous types of repeating firearms existed leading up to, around, and directly after the time of the ratification of the Second Amendment, which, in some cases, had direct ties to Founding Fathers." (Hlebinsky Report, p. 27). Two examples she offers are a repeater associated with Joseph Belton and a Girardoni air rifle. Put into proper context, these two guns make it clear that the founding generation could only have thought of repeating firearms as flawed curios.

[17] David S. Weaver and Brian Godwin, "John Cookson, Gunmaker," *Arms & Armour* 19, no. 1 (January 2, 2022): 43–63.

[18] Using the Readex collection *America's Historical Newspapers*, I searched in all available newspapers for "Cookson" between 1690-1790. The *Boston Gazette* advertisement above was the only instance that he (Boston gunmaker John Cookson) appeared in the results.

[19] Weaver and Godwin, "John Cookson, Gunmaker," 60.

23. Joseph Belton has come to occupy a particularly prominent position in debates over the history of repeating arms in the United States, because a weapon of his design seems to be the only repeater that American leaders considered using during the Revolution. That given, it is important to get the history right. Ms. Hlebinsky asserts that Belton invented a repeating fusil in 1758. That is almost certainly incorrect. Belton graduated from the College of Rhode Island – today Brown University – in 1769, so he would have still been a child in 1758.[20] Rather than an established gunsmith offering a mature product to revolutionary leaders, Belton seems to have been an ambitious and resourceful young craftsman who saw an opportunity for lucrative military contracts with the outbreak of the American Revolution. In 1775 he pitched an idea for a submersible with cannons that he claimed would sink British ships. Benjamin Franklin recommended Belton and his submersible idea to George Washington, but still the proposal went nowhere.[21]

24. The failure of his submersible idea prompted this inventor-on-the-make to pitch a repeating firearm in another attempt to secure a wartime contract. He informed the Continental Congress that he had "discover'd an improvement, in the use of Small Armes… which I have kept as yet a secret." This was clever self-promotion. It seems that the gun Belton "discover'd" was in fact a relatively conventional superposed load firearm of the type

[20] See the note from the editors of the Franklin Papers, at https://founders.archives.gov/?q=joseph%20belton&s=1111311111&sa=&r=1&sr=

[21] See Benjamin Franklin to Silas Deane, Philadelphia, Aug. 27, 1775, and editors' footnote #2, available here: https://founders.archives.gov/?q=joseph%20belton&s=1111311111&sa=&r=1&sr=, accessed Jan. 27, 2023; Benjamin Franklin to George Washington, Philadelphia, July 22, 1776, and editors' footnote #1, available here: https://founders.archives.gov/?q=joseph%20belton&s=1111311111&sa=&r=3&sr=, accessed Jan. 27, 2023; and George Washington to Benjamin Franklin, New York, July 30, 1776, available here: https://founders.archives.gov/?q=joseph%20belton&s=1111311111&sa=&r=4&sr=, accessed Jan. 27, 2023.

that Europeans had tinkered with for centuries. Ms. Hlebinsky incorrectly states that Washington placed an order for 100 of these guns. (Hlebinsky Report, p. 25). Period documentation (all readily available online) makes it clear that Washington had nothing to do with it. Rather, it was members of the Continental Congress that asked Belton to construct 100 of these "new improved" guns. They cancelled the order a few days after extending it, however, and refused to ever reconsider notwithstanding Belton's increasingly desperate appeals.[22]

25. Ms. Hlebinsky doesn't explain *why* Congress cancelled the order, but that question is worth asking. After all, the nation was engaged in an existential struggle. Why would it scorn a significant military advantage? It seems that Congress changed its mind once it heard Belton's exorbitant demands for compensation. Belton initially requested £1000 from each state, only to cut the price in half as soon as Congress balked. Either figure amounted to a significant sum at the time.[23] But the Continental Congress issued about $200 *million* in currency during the Revolutionary War (worth somewhere between $5 billion and $22 billion today).[24] It clearly had the wherewithal to hire Belton if it had wanted to.

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[22] The relevant correspondence has been digitized and transcribed, and is available here: https://en.wikisource.org/wiki/Correspondence_between_John_Belton_and_the_Continental_Congress, accessed Jan. 27, 2023.

[23] See Joseph Belton to John Hancock, Philadelphia, May 8, 1777, at https://en.wikisource.org/wiki/Correspondence_between_John_Belton_and_the_Continental_Congress, accessed Feb. 4, 2023.

[24] For wartime currency, see Stephen Mihm, "Funding the Revolution: Monetary and Fiscal Policy in Eighteenth-Century America - Google Search," in *The Oxford Handbook of the American Revolution* (Oxford; New York: Oxford University Press, 2013), 334. For present-day value, see https://www.measuringworth.com/calculators/uscompare/relativevalue.php, accessed Jan. 27, 2023.

Congress could and would have paid his price *if* it believed he and his guns would deliver a meaningful military advantage. That delegates evidently did not believe this tells us much about the quality of the arms on offer. Buying 100 superposed load arms for a reasonable price might have made sense. Anything more than that was clearly not worth Congress's time.[25]

26. Given the technical challenges afflicting repeat-fire gunpowder weapons, whether rotating breech-, multi-barrel-, magazine-, or superposed load-designs, it is little wonder that one of the only repeating weapons from the period that enjoyed even limited, experimental military use in a European army was not a true firearm, but rather an air-gun. Using highly compressed air as the propellant, rather than gunpowder, eliminated many of the problems that had long bedeviled the quest for repeating arms. It was a relatively simple enhancement to attach a fixed tubular magazine to the side or underside of the air-gun's barrel, and to feed balls into the chamber (using gravity, by tipping the barrel up), one-by-one with a lever. The shooter could then fire as many rounds as the magazine would hold before needing to reload the fixed magazine. Depending on the size and pressure of the compressed air reservoir, the shooter might even be able to empty the magazine more than once before needing to refill the propellant. As with other categories of repeaters, air-guns had been produced since at least the sixteenth century and probably earlier.

[25] In the mid-1780s, a firm called "Jover & Belton" produced a small number of sliding-lock superposed load arms in London. It is possible that this was the same man who made the pitch to Congress in 1775/1777. But Lewis Winant reminds us "we have no reason to assume there is more than coincidence in the fact the name Belton appears as maker of both the 1777 American repeater and the 1786 English repeater. The name is not uncommon." Winant, *Firearms Curiosa*, 176.

27. The most impressive air-gun of the period was developed in Vienna by one-handed Bartolomeo Girardoni, shortly after the American Revolution.[26] Following his gruesome accident working with magazine firearms, he decided he'd had enough of gunpowder weapons and transitioned to air-guns. Girardoni made a number of improvements to existing designs, most especially an elegant breechblock mechanism for chambering balls from the attached magazine. Multi-shot air-rifles of his design saw limited service in the Austrian military between the 1790s and 1810s, a special corps of hundreds of snipers being equipped with the weapon. Air-rifles had numerous advantages over gunpowder weapons. In addition to the ease with which they were configured for multi-fire, they required no gunpowder (not always easy to obtain), and the absence of gunpowder meant that their bores required little cleaning and that shots produced no smoke and little noise.[27]

28. Nonetheless, air-guns had major drawbacks that consigned them to the status of military oddities and niche consumer items, notwithstanding their significant advantages. Period technology made it difficult to achieve air pressures commensurate with black powder, so power was one concern. As an article in the *Sportsman's Cyclopedia* from 1831 put it, "for buck or deer shooting the best air gun is not sufficiently powerful; for rook shooting it is very well calculated."[28] The weapons were time-consuming and onerous to prime. Girardoni's air-rifles had to be pumped fifteen-hundred times to fully pressurize one reservoir. Cannisters of pressurized air can explode, much like early gunpowder magazines, producing grenade-like

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[26] Wolff, *Air Guns*, 5–13. Girardoni's name is commonly misspelled Girandoni. For background on his air rifle, see the learned essay by Robert D. Beeman, "New Evidence on the Lewis and Clark Air Rifle – an "Assault Rifle" of 1803," https://www.beemans.net/lewis-assault-rifle.htm, accessed Feb. 4, 2023.

[27] For advantages, see Wolff, *Air Guns*, 25–30.

[28] Cited in *Id.*, 22.

effects. The craft and expense involved in building reliable air-guns greatly exceeded even the considerable skill required to build fine firearms. Air-tight reservoirs, pumps, valve housings and valve seats had to be made with a degree of precision unknown in most manufactured goods from the era. These material and technical demands greatly increased costs. Moreover, even a craftsman of Girardoni's caliber did not yet have the materials or tools necessary to build the critical components of his design durably and with absolute precision. The air-gun's various delicate parts could easily fall out of order, as for instance when leather gaskets failed or any of the system's metal threads (necessary for attaching the removable air-reservoir to the valve assembly and the valve assembly to the gun) came out of alignment. Competent repairs were hard to secure because the requisite skills were so unusual. According to one of the few book-length studies of historic air-guns, the high cost of these arms and their various limitations made them "a novelty used by people of wealth who had sufficient funds to go in for the unusual."[29]

29. For all of these reasons, air-guns were exceedingly rare in eighteenth-century America. Indeed, they were so rare that owners could charge people to see them. Two months after the Second Amendment was ratified, a museum proprietor in New York named Gardiner Baker took out ads in the city's newspapers to promote his latest acquisition: "an air gun, made by a young man, a native of Rhode-Island." According to its new owner, the gun would "do execution twenty times, without renewing the charge," suggesting that it was a single-shot weapon capable of firing twenty individually loaded

[29] For disadvantages, see Wolff, 30–33. Quote from p. 31. See also John Paul Jarvis, "The Girandoni Air Rifle: Deadly Under Pressure," March 15, 2011, https://www.guns.com/news/2011/03/15/the-girandoni-air-rifle-deadly-under-pressure, accessed Feb. 4, 2023.

rounds before needing to renew the compressed air supply. Baker explained that he had purchased the gun "at a very considerable price, with a view eventually to make it the property of the American museum." In order to recoup his investment, he announced that he would "exhibit it to the examination of all persons desirous of viewing it, and of discharging a shot, for which they shall pay six-pence."[30]

30. Meriwether Lewis brought a Girardoni Air Rifle on his famous expedition across the continent with William Clark for a similar purpose. The Corps of Discovery seems never to have fired the gun offensively or defensively. None of the more than twenty references to the air-rifle in the expedition's journals involve combat.[31] Instead, like virtually every other repeating firearm from that period, this unusual weapon was employed as a show piece. Lewis brought the air-rifle on the expedition precisely because it was so uncommon. He hoped a gun that would fire multiple times without powder, flash, smoke, or much noise, would impress Native Peoples. It did. He happily reported that it "excited great astonishment," which is itself a testament to the weapon's novelty.[32]

31. But Indigenous people weren't the only ones fascinated with this exotic air-gun. At the very outset of the expedition near Pittsburgh, "some gentlemen" asked for a demonstration. Lewis obliged, firing the air-gun seven times. But when one of the men took

[30] "To the Curious," *The Weekly Museum* (New York, NY), Feb. 11, 1792. A copy of this article is attached as Exhibit B.

[31] For a discussion of the air gun and the expedition, see Jim Garry, *Weapons of the Lewis and Clark Expedition* (Norman, Okla: The Arthur H. Clark Company, 2012), 91–103.

[32] April 18, 1806 entry by Meriwether Lewis, *Journals of the Lewis & Clark Expedition*, https://lewisandclarkjournals.unl.edu/item/lc.jrn.1806-04-18#lc.jrn.1806-04-18.01, accessed Feb. 4, 2023.

hold of the weapon, he accidentally squeezed off an eighth shot that hit a woman forty yards away, in the head. To his great relief, Lewis found the woman's "wound by no means mortal, or even dangerous."[33] Ms Hlebinsky writes that the Girardoni could fire forty rounds before its air reservoir needed to be refilled. But the weapon Lewis brought with him seemed to lose power far more rapidly. That the gun's eighth round inflicted only a minor wound at forty yards suggests it lost pressure quickly and might not have actually been able to fire more than ten effective rounds.

32. Air-guns remained rare curiosities elsewhere in the U.S. in the early nineteenth century. Just a few months before Lewis and Clark set out, the museum in Connecticut's State House advertised an air-gun as one of its three prime attractions (the others being a wampum cloak and a sixteen-foot-long snake skin from South America). In no sense were these weapons commonly used at the time.[34]

33. In sum, notwithstanding the great desire of states for military advantage, the great incentives that they held out for inventors who could deliver it, and the centuries of skillful effort that went into chasing those incentives, repeating firearms remained militarily and commercially irrelevant throughout the eighteenth and early nineteenth centuries. On those very rare occasions when such weapons were deployed by European militaries, they were issued to dozens or hundreds of men in wars involving tens or hundreds of thousands of combatants. Commercially, the best (and most expensive) examples of repeating firearms

[33] August 30, 1803 entry by Meriwether Lewis, *Journals of the Lewis & Clark Expedition*, https://lewisandclarkjournals.unl.edu/item/lc.mult.1803-08-30kloefkorn, accessed Feb. 4, 2023.

[34] James Steward's advertisement "Museum," in *The Connecticut Courant*, April 27, 1803. A copy of this advertisement is attached as Exhibit C.

circulated among a paper-thin slice of Europe's political and economic elite. For almost everyone else at the time, these guns were unknown and irrelevant.

34. I have spent the past fifteen years researching the historic international arms trade in the archives of multiple countries. I have never come across any evidence in primary sources that repeating firearms were anything other than exotic curios in this era. Few alive at the time had ever laid eyes on one. Single-shot muzzle-loading smoothbore muskets, rifles, and pistols remained the only handheld firearms that the vast majority of people ever owned, used, or encountered in the late-eighteenth and early-nineteenth centuries. That fact ought to be borne in mind when assessing the absence of laws regulating repeating firearms and ammunition capacity at the time the Second Amendment was adopted.

C. Firearms regulation in America prior to 1791

35. Ms. Hlebinsky's report has little to say about firearms regulation in the colonial and early national eras, other than to observe that "while the Founding Fathers were aware of them [repeating firearms], manufacturers could continue to produce those designs, to my knowledge, without regulations, unlike the fire safety laws that were enacted to regulate gunpowder." (Hlebinsky Report, p. 27). This raises an important question: why didn't the Founders regulate repeating firearms? We have an incomplete understanding of the history of firearm regulation in the United States. Electronically searchable compendia of historic laws have only captured part of our legal tradition. They are particularly lacking when it comes to local ordinances, where (as today) much regulation and enforcement originated.[35] Still, even the incomplete record reveals a rich regulatory tradition that went far beyond fire safety laws.

[35] Joseph Blocker & Eric Ruben, "Originalism-by-Analogy and Second Amendment Adjudication," p.56 *Yale Law Review* (forthcoming 2023).

This regulatory tradition emerged in the name of public safety – public safety as authorities at the time defined it. A quick tour of this tradition provides important context for understanding why the Founders did not regulate repeating firearms.

36. Lawmakers in British North America and in the early United States passed hundreds of laws that directly or indirectly regulated firearms prior to 1791. Sometimes these concerns look familiar to our own times. For instance, states passed laws regulating the carrying[36] or brandishing[37] of particular weapons; forbidding discharge in sensitive times[38] and places;[39] and sentence enhancements for crimes committed with arms.[40] Regulations of all these types were enacted in the decade before the ratification of the Second Amendment, and they reflect public safety concerns familiar to twenty-first century Americans.

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[36] *See, e.g.*, An Act Forbidding and Punishing Affrays, ch. 49, 1786 Va. Acts 35 (1786), *available at* https://firearmslaw.duke.edu/laws/1786-va-laws-33-ch-21-an-act-forbidding-and-punishing-affrays/ (last visited June 1, 2023).

[37] *See, e.g.*, An Act to Prevent Routs, Riots, and Tumultuous assemblies, and the Evil Consequences Thereof, 1786 Mass. Sess. Laws (1786), *available at* https://firearmslaw.duke.edu/laws/1786-mass-sess-laws-an-act-to-prevent-routs-riots-and-tumultuous-assemblies-and-the-evil-consequences-thereof/ (last visited June 1, 2023).

[38] *See, e.g.*, An Act to Prevent Firing of Guns and Other Firearms within this State, on Certain Days Therein Mentioned, ch. 81, 1784–1785 N.Y. Laws 152 (1785), *available at* https://firearmslaw.duke.edu/laws/1784-1785-n-y-laws-152-an-act-to-prevent-firing-of-guns-and-other-firearms-within-this-state-on-certain-days-therein-mentioned-ch-81/ (last visited June 1, 2023).

[39] See the 1788 Ohio Law 42, "An Act for Suppressing and Prohibiting Every Species of Gaming for Money or Other Property, and for Making Void All Contracts and Payments Made in Furtherance Thereof, ch. 13, § 4, 1788–1801 Ohio Laws 42 (1788), *available at* https://firearmslaw.duke.edu/laws/1788-1801-ohio-laws-42-an-act-for-suppressing-and-prohibiting-every-species-of-gaming-for-money-or-other-property-and-for-making-void-all-contracts-and-payments-made-in-furtherance-thereof-ch-13/ (last visited June 1, 2023).

[40] *See, e.g.*, the 1788 Ohio Laws 20, A Law Respecting Crimes and Punishments…, ch. 6, 1788_1801 Ohio Laws 20 (1788), *available at* https://firearmslaw.duke.edu/laws/1788-1801-ohio-laws-20-a-law-respecting-crimes-and-punishments-ch-6/ (last visited June 1, 2023).

37. But regulating gun violence between subjects (or, after independence, citizens) was not as significant a policy concern in early America as it is today. Prior to the widespread availability of breechloading weapons and metallic cartridges in the mid-nineteenth century, firearms were awkward tools either for perpetrating or resisting crimes of passion. They were notoriously inaccurate at range and had to be muzzle-loaded with gunpowder and ball before every shot, either by pouring ammunition directly into the barrel or packing in a pre-made paper cartridge loaded with powder and ball. That took time and focus. Moreover, such guns could not be kept safely armed and at the ready for any extended period because black powder corroded iron barrels so quickly. Partly for these reasons, firearms usually played a relatively small role in murders between white people in North America before the era of the Civil War. Randolph Roth, the nation's foremost scholar of the history of homicide in North America, has found for example that only 10-15% of family and intimate partner homicides involved a firearm prior to the mid-nineteenth century. More generally, rates of gun violence rose and fell in step with political instability and shifts in faith in government, justice, and social hierarchy. At its worst, firearms were never used in more than two-fifths of homicides between unrelated white people before the Civil War era. By way of comparison, in 2021 approximately four-fifths of all homicides in the United States involved a firearm.[41]

[41] For homicide and arms technology, see Randolph Roth, "Why Guns Are and Are Not the Problem: The Relationship between Guns and Homicide in American History," in *A Right to Bear Arms? The Contested Role of History in Contemporary Debates on the Second Amendment*, ed. Jennifer Tucker, Barton C. Hacker, and Margaret Vining (Washington D.C.: Smithsonian Scholarly Press, 2019), 113–34. For 2021 homicides, see John Gramlich, "What the Data Says about Gun Deaths in the U.S.," *Pew Research Center* (blog), April 26, 2023, https://www.pewresearch.org/short-reads/2023/04/26/what-the-data-says-about-gun-deaths-in-the-u-s/, accessed May 3, 2023.

38. Although interpersonal gun violence was not a significant policy concern at the time, the large majority of pre-1791 laws pertaining to firearms reflected public safety concerns that *did* dominate at the time and which are (thankfully) alien to our own times. These concerns followed from the two systemic forms of violent predation that preoccupied generations of European colonists and American citizens, including most of the founders: dispossessing Native People of their land and terrorizing and enslaving people of African descent (nearly a fifth of the population on the eve of the Revolution). Neither project could have been sustained without a weapons gap. Moreover, European rivals (the Dutch, French, Spanish, and, after Independence, British) controlled parts of eastern North America and periodically threatened the ambitions and security of British colonists and U.S. citizens. During wartime, these rivals also threatened to arm the Indigenous and African-descent victims of the British and early U.S. project. Anglo authorities before and after Independence used law to try and answer these interconnected challenges to the safety of the white public.

39. To address these public safety concerns, the largest category of relevant legislation implemented by Anglo authorities consisted of hundreds of militia laws. Among other things, militia laws sought to encourage and regulate firearm possession, upkeep, and practice by white men throughout the colonies and states in the early national era. The militia was the primary vehicle for public safety in the colonial and early national era, tasked with collective security needs of a white slaveholding, settler-colonial public periodically menaced by European rivals. Authorities in colonial America passed more than six hundred militia laws before the Revolution, laws mandating how these bodies were to be constituted, mobilized,

equipped, led, disciplined, and armed.[42] Research in militia returns, census data, and probate records makes it clear that government exerted a powerful influence on the geography of gun ownership in the British colonies, and that it did so primarily through the mechanism of militia laws. Gun ownership was highest in those colonies where governments energetically encouraged and supported militia service. These were places where the violence of slavery and settler colonialism, and/or the threat of nearby imperial rivals inevitably resulted in security concerns. In such places, colonial authorities mandated gun ownership and, in times of heightened anxiety, took steps to equip militiamen who lacked their own arms.[43]

40. Colonial and early national legislatures also passed numerous laws aimed at depriving Indigenous and enslaved people of access to arms and ammunition.[44] Courts have painful decisions to make about these discriminatory laws.[45] They are manifestly bigoted and hateful, and there is something not just objectionable but degrading about giving them any

[42] Several hundred of these laws were anthologized by the Selective Service System in the mid-twentieth century. See Arthur Vollmer, ed., *Military Obligation: The American Tradition; A Compilation of the Enactments of Compulsion from the Earliest Settlements of the Original Thirteen Colonies in 1607 through the Articles of Confederation 1789* (Washington: Selective Service System, 1947).

[43] See K. Sweeney, "Firearms, Militias, and the Second Amendment" in *The Second Amendment on Trial: Critical Essays on District of Columbia v. Heller*, by Saul Cornell and Nathan Kozuskanich (Amherst & Boston: University of Massachusetts Press, 2013), 310–82; James Lindgren and Justin L. Heather, "Counting Guns in Early America," *William and Mary Law Review* 43 (2001): 1777; Michael Lenz, *"Arms Are Necessary": Gun Culture in Eighteenth-Century American Politics and Society* (Köln: Böhlau, 2010).

[44] For laws targeting Native and enslaved people, see examples in John C. (John Codman) Hurd, *The Law of Freedom and Bondage in the United States* (Boston: Little, Brown & Co., 1858), 1:234, 243–44, 257, 288, 302–6; Sally E. Hadden, *Slave Patrols: Law and Violence in Virginia and the Carolinas* (Cambridge, Mass.; London: Harvard University Press, 2003), 37.

[45] The dilemma is sensitively described, with examples of differing solutions, in Jacob D. Charles, *On Sordid Sources in Second Amendment Litigation*, 76 STAN. L. REV. ONLINE __ (forthcoming 2023).

form of deference today. One option, then, is to simply exclude them from consideration of our nation's tradition of firearms regulation. As a historian of early America, though, that strikes me as folly. Racism and white supremacy are too marbled through our history, too fundamental to explaining it, for courts to indulge the notion that we can ignore law touched by bigotry and hope to have anything coherent left afterward. Historic legislation did not target Black and Native people because gun regulation was racist. Legislation targeted Black and Native people because early American society was racist. We can be clear-eyed about the reprehensible aspects of our past generally, and the discriminatory intent of many historic firearm regulations specifically, without ignoring them.[46]

41. Crucially, colonial and early national authorities were absolutely willing to deprive white people of firearms, too, when moved by concerns for public safety. This is what happened in the early stages of the American Revolution. Patriot committees began disarming white political opponents as early as the fall of 1775. Events in the colony of New York illustrate the pattern. Patriots in Brookhaven, New York, resolved in September 1775 to disarm anyone who dared "deny the authority of the Continental or of this Congress, or the Committee of Safety, or the Committees of the respective Counties, Cities, Towns, Manors, Precincts, or Districts in this Colony." At this point in the rebellion most residents of New York were likely either loyalists or vainly hoping to remain neutral in the spiraling conflict with Britain, so such disarmament orders theoretically applied to a vast population. In January, 1776, the Continental Congress ordered several hundred-armed minutemen into Queen's County in New York to disarm loyalists. George Washington ordered General

[46] For an illuminating consideration of the history of racist gun law and how it has been instrumentalized in court cases, see Patrick J. Charles, *Racist History and the Second Amendment: A Critical Commentary*, 43 CARDOZO L. REV. 1343 (2022).

Charles Lee to disarm everyone in Long Island "whose conduct, and declarations have render'd them justly suspected of Designs unfriendly to the Views of Congress." General Philip Schuyler disarmed "malignants" in the Hudson Valley, mostly Scotch Highlanders loyal to the king. In March of 1776, Congress concluded that nearly the entire population of Staten Island consisted of "avowed Foes" and ordered a general disarmament there.[47]

42. Disarmament was not confined to New York. Frustrated at the results of more targeted efforts, the Continental Congress called for a general ban of gun ownership among loyalists on March 14, 1776. It recommended to all the individual colonies that they immediately "cause all persons to be disarmed within their respective colonies, who are notoriously disaffected to the cause of America, or who have not associated, and shall refuse to associate, to defend, by arms, these United Colonies."[48] In addition to New York, Patriot leaders ordered loyalists disarmed in Connecticut[49], North Carolina[50], New Jersey[51], South

[47] New York examples drawn from Thomas Verenna, "Disarming the Disaffected," *Journal of the American Revolution*, Aug. 26, 2014.

[48] See Congressional resolutions of Tuesday, Jan. 2, 1776, in Worthington Chauncey Ford, ed., *Journals of the Continental Congress, 1774-1789, Edited from the Original Records in the Library of Congress* (Washington, D.C.: Government Printing Office, 1904), 4:205.

[49] "An Act for restraining and punishing Persons who are inimical to the Liberties of this and the rest of the United Colonies," Connecticut Assembly, Dec. 14, 1775, AA: 4:270-72.

[50] "Extract of a Letter from the Provincial Council of North Carolina, March 5, 1776," in M. St. Claire Clarke and Peter Force, eds., *American Archives: Consisting of a Collection of Authentick Records, State Papers, Debates, and Letters and Other Notices of Publick Affairs, the Whole Forming a Documentary History of the Origin and Progress of the North American Colonies; of the Causes and Accomplishment of the American Revolution; and of the Constitution of Government for the United States, to the Final Ratification Thereof. In Six Series* ..., 4 (Washington D.C., 1837), 5:59. [Hereafter AA]. See also AA 5:67.

[51] "July 1, All persons who refuse to bear arms to be disarmed," AA 6:1634.

Carolina[52], Pennsylvania[53], Massachusetts[54], Maryland[55], and Virginia.[56]

43. There were two obvious motivations for the Founding Fathers and likeminded Americans to orchestrate a nationwide disarmament campaign against white political opponents. First, loyalists could of course use their weapons to resist the insurgency and fight for the king. Second, patriot forces were perilously under-armed and needed whatever guns they could find. This is the reason that George Washington argued for a broad confiscation program in at least one Pennsylvania county, targeting those who "claimed the Right of remaining Neuter" as well as those actively fighting for the crown. Washington insisted that "we ought not to hesitate a Moment in taking their arms, which will be so much wanted in furnishing the new Levies."[57]

44. Indeed, patriot forces were so desperate for guns early in the war that they sometimes disarmed whites regardless of their political affiliation. In early 1776, Georgia (a tenth colony to add to the list above) dispatched men to search the homes of all "overseers and negroes" throughout the colony, and even those across the river in southern South Carolina, in

[52] South Carolina Congress, March 13, 1776, AA 5:592. South Carolina went further, ordering that if anyone previously disarmed shall arm himself again, that person would be incarcerated.

[53] See resolves of the Pennsylvania Assembly for April 6, 1776, AA 5:714.

[54] See notes from the Massachusetts Council, May 1, 1776, AA 5:1301.

[55] See notes from the Baltimore County Committee, March 8, 1776, AA 5:1509.

[56] Extracts from the Votes of the Assembly [VA], April 6, 1776, AA 6:881.

[57] George Washington to the Pennsylvania Council of Safety (Dec. 15, 1776), at https://founders.archives.gov/documents/Washington/03-07-02-0276

order to seize all guns and ammunition they found, leaving behind only "one gun and thirteen cartridges for each overseer."[58]

45. From Massachusetts in the north to Georgia in the south, then, guns were taken away from white Americans in the name of public safety–public safety as the founding generation defined it. The emergency of the Revolution obviously made it easier for lawmakers to justify taking guns from white people, but the conviction that the state had regulatory authority to do so did not begin with the Revolution, nor end with it. In 1786, a tax uprising erupted in western Massachusetts. "Shay's Rebellion," as it came to be known, helped convince nationalists to convene the Constitutional Convention in 1787. That same year the uprising also moved the Massachusetts Assembly to pass a law disarming not only persons who take up arms against the state, but also those "who have given or may hereafter give them counsel, aid, comfort or support, voluntarily, with intent to encourage the opposition to the government."[59]

46. In sum, early America had a diverse and extensive tradition of regulating firearms in the name of public safety. Why, then, do we find no period laws regulating repeating firearms or restricting the size of firearm magazines? Ms. Hlebinsky writes that there was a "centuries long trail of innovations that gradually and continually advanced firearms technology," and that "modern-day firearms are the direct descendants" of this trail. She argues that individuals at the time of the Founding Era could see this; that they knew "that

[58] Allen Daniel Candler, ed., *The Revolutionary Records of the State of Georgia* (Atlanta, Ga.: The Franklin-Turner Company, 1908), 92.

[59] See Massachusetts Act of Feb. 16, 1787, ch. VI, 1787 Mass Acts 555 (1787), *available at* https://firearmslaw.duke.edu/laws/act-of-feb-16-1787-ch-vi-1787-mass-acts-555/ (last visited June 1, 2023).

firearm technology previously underwent and would in the future undergo significant change and innovation." (Hlebinsky Report, p. 10). The implication seems to be that the Founders were already living in an era of repeating firearms, understood that such firearms would inevitably become more effective and deadly, and declined to regulate them, anyway, presumably because they were ideologically opposed to regulating firearms.

47. If that is indeed the implication, it is unconvincing. It is unconvincing because, as I've suggested above, early American lawmakers had never considered guns beyond the reach of their regulatory authority. It is unconvincing because repeating firearms were extremely rare and notoriously unreliable in the United States in 1791. It is unconvincing because all of the major designs for repeat-fire weapons then existing had been introduced more than a century earlier, and as of 1791 all of them were still subject to the same stubborn drawbacks that had for generations consigned them to being little more than niche curiosities. The history of firearms innovation may be "a continuum of gradual advancements in technology," (Hlebinsky Report, p. 36), in other words, but most of those advancements had been stalled for generations pending the breakthroughs associated with the Industrial Revolution.

48. Finally, it is unconvincing because legislators concern themselves with what is, rather than what might be. Like their counterparts today, lawmakers from early America focused their efforts on actual social phenomena, not the possible implications of experimental technologies. They didn't spend their time scouring international patent filings or European publications for news about experimental firearms technology. They didn't hold lengthy debates about the social implications of weapons that few of them had ever seen, and that were not known to have ever been militarily or commercially consequential anywhere in the world.

It mattered not at all to them whether "technologies often associated with modern day have roots back as far as the 1400s in some respect." (Hlebinsky Report, p. 10). What mattered was the consequences that repeating firearms had in their present. And repeating firearms had no consequences in their present.

49. Even if they had been aware that a Philadelphia gunmaker had a secret method of firing twenty superimposed loads with a single pull of a trigger, in other words, or that a museum proprietor in New York was charging people to see a repeater that fired compressed air, lawmakers in the colonial and early national eras would have had no incentive to craft legislative solutions to these technologies because these technologies had created no social problems. They remained flawed curiosities. The simplest and most accurate explanation for the absence of regulation, therefore, is that repeating firearms were much too rare and too irrelevant to public safety to attract regulatory attention in 1791.

50. An appropriate modern-day analogy might be personal jetpacks. Much as repeating firearms did during the eighteenth century, personal jetpacks have held appeal both for militaries and private consumers for more than a hundred years. That appeal has generated competition in research and development. But jetpacks remain an expensive and experimental curiosity to this day, because of stubborn technological, safety, and practical challenges, including cost. A future historian (or jurist) discovering evidence that a patent was taken out on a jetpack design as early as 1919 (it was); that militaries remained intrigued by the technology throughout the century (indeed, they still are); and that the jetpack commanded enduring popular interest, could conclude that the absence of public regulation reflected an ideological disposition against regulating jetpacks. But the simpler and most

accurate explanation would be that jetpacks remained too rare to attract regulatory attention in 2023.[60]

II. Large-Capacity Repeating Firearms Were Exceedingly Rare at the Time of Reconstruction

51. Firearms technology would undergo huge changes after 1791. Advances in metallurgy, machine tooling, and mass-production associated with the Industrial Revolution enabled gifted firearms innovators and engineers to finally overcome many of the challenges that had frustrated the quest for reliable repeat fire in earlier centuries. New innovations built on one another, such that the period from the 1820s through the 1860s became one of the most productive and dynamic in the history of firearms technology. Nonetheless, even this era of breakneck innovation had its limits. As I explain below, reliable hand-held arms with capacities greater than ten rounds remained exceedingly rare in the United States when the Fourteenth Amendment was ratified in 1868.

A. False starts and repeat-fire pistols

52. The evolution of firearms technology had its false starts after the ratification of the Second Amendment. In 1792, while the new federal government was reeling from a series of catastrophic military defeats at the hands of Indigenous warriors in the Ohio Country, a Pennsylvanian named Joseph Chambers tried to interest Secretary of State Thomas Jefferson in a superposed load repeater of his design.[61] "Every nation desiring to possess the

[60] Anthony Quinn, "The Fall and Rise of Jetpacks," Aug. 16, 2022, Royal Aeronautical Society Website, https://www.aerosociety.com/news/the-fall-and-rise-of-jetpacks/#:~:text=The%20concept%20of%20a%20jetpack,never%20built%20or%20even%20prototyped, accessed Feb. 4, 2023.

[61] To Thomas Jefferson from Joseph G. Chambers, 13 August 1792, *Founders Online,* National Archives, https://founders.archives.gov/documents/Jefferson/01-24-02-0274. [Original source: *The Papers of Thomas Jefferson*, vol. 24, *1 June–31 December 1792*, ed. John

means of destroying the greatest number possible of their enemies," Jefferson responded enthusiastically, "your discovery, if found effectual in experiment, will not want patronage anywhere."[62] Put differently, if Chambers could deliver, the inventor would become a very wealthy and influential man. But, like so many who came before (and after) him, Chambers was unable to convince Jefferson or others in the new U.S. government that his firearm was "effectual in experiment." Chambers had more success during the War of 1812, when the new Department of the Navy purchased a few hundred of his weapons (different designs all employing superposed loads). Though it isn't clear any of the guns were ever put to use, the designs were sufficiently intriguing that multiple foreign governments made inquiries. These inquiries concluded that the dangers and disadvantages of superposed loads still outweighed their advantages.[63]

53. In 1821, another American gunmaker, Isaiah Jennings of New York, obtained a patent for a gun with a sliding lock that enabled the shooter to fire superposed loads one at a time–an elaboration on a very old idea. Jennings had two basic models: one that fired four shots, and another, rarer design that fired ten. A distinct, all-metal variant, made in even smaller quantities than the others, held twelve rounds. Several hundred arms

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Catanzariti. Princeton: Princeton University Press, 1990, pp. 290–293.]

[62] From Thomas Jefferson to Joseph G. Chambers, 5 November 1792, *Founders Online,* National Archives, https://founders.archives.gov/documents/Jefferson/01-24-02-0539. [Original source: *The Papers of Thomas Jefferson*, vol. 24, *1 June–31 December 1792*, ed. John Catanzariti. Princeton: Princeton University Press, 1990, p. 580.]

[63] For Chambers' proposal in context, see Andrew Fagal, "The Promise of American Repeating Weapons, 1791-1821," published online at *Age of Revolutions,* Oct. 20, 2016, https://ageofrevolutions.com/2016/10/20/the-promise-of-american-repeating-weapons-1791-1821/, accessed Feb. 4, 2023.

of the Jennings design were made under contract for the state of New York in the late 1820s.[64] While well-made, these select-fire superposed load flintlocks were expensive, mechanically complex, and still prone to the same catastrophic dangers that afflicted all superposed load designs. Gunmakers would continue to experiment with superposed load firearms for decades. But they were ultimately technological dead-ends with no meaningful military or commercial impact.[65]

54. But more lasting changes in firearms technology were underway. One of the most important was the development of the percussion-cap ignition system. Around the turn of the century, European chemists developed a new class of highly explosive compounds, dubbed fulminates. Though the potential military applications of these compounds were tantalizing, early experiments demonstrated that they were much too powerful to be used in firearms or artillery as an alternative propellant to gunpowder. In 1805, Englishman Alexander Forsyth had the insight that while fulminates could not yet be used for propulsion, in very small quantities they could be used for ignition. Others soon improved on his idea. By the 1810s, multiple inventors were developing "percussion caps"–small, sealed caps (usually made of copper) filled with fulminate.[66] It was a simple matter to redesign gun locks so that instead of a vice holding a flint, hammers looked like actual hammers. Rather than a pan filled with priming powder, the newly designed hammer would fall upon an iron nipple topped with a percussion cap. The percussion would ignite the fulminate, which would in turn ignite the

[64] *Flayderman's Guide* (9e), characterizes the Jennings Repeating Flintlock as "one of the great military rarities and oddities" (p. 608).

[65] Winant, *Firearms Curiosa*, 178-93.

[66] W. Y. Carmen, *A History of Firearms: From Earliest Times to 1914* (Mineola, Dover Publications, 2004), 162, 176.

main gunpowder charge inside the barrel. Percussion caps were inexpensive to mass produce, and far more reliable than flints as a source of ignition. Over the next few decades, militaries around the world would convert their stockpiles of firearms from flintlocks to percussion locks.[67]

55. The advent of percussion cap ignition opened the way for reliable repeating pistols.[68] Relieved of cumbersome hammer-vices, flints, and priming pans filled with loose powder, arms designers saw a path to using the old ideas of multiple, rotating barrels or rotating breeches to make practical weapons for the first time. Improvements in manufacturing and machine tooling made it possible both to build arms from nearly identical component parts, and to manufacture them at greater speed and less cost than ever before. In decades prior, such designs would have still faced severe manufacturing obstacles to large-scale production because it was so difficult to make precision component parts by hand. But by the 1830s, Springfield Armory and some of its biggest contractors had become world-leaders the use of automatic milling machines to produce parts so uniformly as to be interchangeable. This "American system of manufacture" as the rest of the world would soon call it, combined with other advances in metallurgy and machine tooling made it possible both to build complex arms from nearly identical component parts, and to manufacture them at greater speed and less cost than ever before.[69]

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[67] Daniel R. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981), 85-87.

[68] Flintlock revolvers never could overcome the design challenges. For example, Elisha H. Hollier devised an elegant flintlock revolver in 1818. Hlebinsky asserts vaguely (and without a source) that this firearm was "ordered in bulk" (p. 23). But according to Flayderman, only around 150 were ever made. *Flayderman's Guide*, p. 712.

[69] William Hardy McNeill, *The Pursuit of Power: Technology, Armed Force, and Society*

56. By the 1830s, two types of repeating pistols were entering the market. The first type, skillfully refined and aggressively patented by the inventor Samuel Colt, featured a single barrel with a multi-chambered, rotating breech. Percussion caps were affixed to the rear of each chamber in the breech. The chamber rotated mechanically so that the cap affixed to successive chambers would assume position to receive the hammer's blow and ignite the powder inside each chamber. The second type, pioneered by Ethan Allen, featured three or more barrels that rotated around an axis (either manually or mechanically), the charge for each barrel ignited by a separate percussion cap. Also referred to as "revolvers" early on, these arms eventually came to be known as "pepperboxes."[70]

57. Unlike repeat-fire curiosities in the eighteenth century, pepperboxes and revolvers had actual social consequences. And these social consequences generated legislation. Responding to rising public safety concerns over the increase in gun violence and the proliferation of concealable weapons (repeating pistols as well as single-shot, percussion-cap pistols, bowie knives, and other weapons), lawmakers across the country sought to regulate conceal-carry. Saul Cornell, one of the nation's preeminent historians of gun law in early America, calls this "the first wave of modern-style American gun-control laws." More than thirty such laws were enacted around the country between the ratifications of the Second and Fourteenth Amendments.[71]

Since A.D. 1000 (Chicago: University of Chicago Press, 1982), 233-34; Merritt Roe Smith, *Harpers Ferry Armory and the New Technology: The Challenge of Change* (Ithaca: Cornell University Press, 1977), 219-51.

[70] For pepperboxes and revolvers, see Louis A. Garavaglia and Charles G. Worman, *Firearms of the American West, 1803-1865* (Niwot, Colo.: University Press of Colorado, 1998), 95–104, 139–52, 203–20.

[71] For law, see Saul Cornell, "Limits on Armed Travel under Anglo- American Law:

58. While recognizing the new firepower that repeat pistols made available to U.S. consumers, it is important to be mindful of two important limitations of pepperboxes and revolvers by the middle of the nineteenth century. The first was capacity. It is true that gunmakers occasionally designed versions capable of firing more than ten rounds.[72] But these were extraordinarily unusual and produced in tiny quantities. Whether the firearm had rotating chambers or rotating barrels, there simply were practical design limits to how many shots it could fire from a single loading. Guns with too many barrels or chambers became too heavy, clunky, and hard to manage. The *vast* majority of revolvers and pepperboxes produced in the nineteenth century held seven or fewer rounds. *Flayderman's Guide to Antique American Firearms and Their Values*, now in its 9th edition, is considered a gold standard reference for historic American firearms. That authoritative guide lists only three nineteenth-century revolvers with greater than ten-round capacity. All of them were made in quantities best characterized as "experimental"– probably fewer than three hundred, combined.[73]

Change and Continuity over the Constitutional Longue Durée, 1688-1868," in *A Right to Bear Arms? The Contested Role of History in Contemporary Debate on the Second Amendment*, ed. Jennifer Tucker, Barton C. Hacker, and Margaret Vining (Washington: Smithsonian Institution, 2019), 79. Spitzer, "Gun Law History," Table 1, 59-60; 63-64. For the relevant laws, see Mark Anthony Frassetto, "Firearms and Weapons Legislation up to the Early 20th Century," (unpublished manuscript, 2013) 20–24. Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2200991

[72] For three examples, see Lewis Winant, *Pepperbox Firearms* (New York: Greenberg, 1952), pp. 104, 124, 137.

[73] (1) The Aaron C. Vaughn Double Barrel Revolver, made in the early 1860s and characterized as "one of the most rare and unusual of American percussion revolvers," held fourteen rounds. Total production: twenty or fewer. (2) The John Walch Navy Model 12 Shot Revolver, made in 1859-1860, chambered twelve rounds (six chambers, each with a double load). Total production: around 200. (3) The Charles E. Sneider two-cylinder revolver, made in the 1860s, held fourteen rounds (in two, seven-shot cylinders). "Quantity unknown; very

59. The second important limitation from mid-nineteenth-century pistols and pepperboxes is that they took a very long time to load. To load a cap-and-ball revolver, the shooter had to fill each chamber with the appropriate measure of gunpowder, insert a ball, compact the ball into the powder charge with a ramming rod, cap the chamber with grease to avoid chain-fire (optional but recommended), and then individually attach percussion caps to each nipple at the back of the chamber.[74] Pepperboxes had comparably laborious loading procedures. Paper cartridges containing powder and ball could be used to slightly expedite the process, but reloading could still take a minute to a minute and a half.

60. In terms of the damage that a single person can inflict with a firearm (or two), limited shot capacity and lengthy reload times made cap-and-ball revolvers and pepperboxes fundamentally different from today's semi-automatic pistols with detachable, large-capacity magazines. For comparison's sake, consider the handguns used by the killer in the Virginia Tech massacre on April 6, 2007. Using a Glock 19 and a Walther P22 and equipped with multiple magazines (of 15- and 10-round capacities, respectively) Seung-Hui Cho fired 174 shots in 9 minutes, killing 33 people and wounding 17 others before taking his own life.[75] Mass-murderers in the mid-nineteenth century could hardly have conceived of that kind of firepower.

B. The slow spread of the first successful large-capacity firearm

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limited. Extremely rare." See Flayderman, *Flayderman's Guide to Antique American Firearms and Their Values*, 374–75, 514.

[74] For a demonstration, see https://www.youtube.com/watch?v=B84wI2MKZ2s

[75] Violence Policy Center, "Background on Pistols Used in Virginia Tech Shooting," April, 2007, https://vpc.org/studies/vatechgunsbackgrounder.pdf, accessed Feb. 1, 2023.

61. The technological and manufacturing advances that made repeat-fire pistols practical weapons for the first time also enabled new breakthroughs in long arms. Innovations in breech-loading and metallic cartridges proved particularly important. Loading a firearm muzzle-first had three disadvantages. It was hard to do while lying prone, and rising up to reload made one an easier target during combat. It meant that rifles were slow and difficult to load, because lead balls had to be nearly as large as the diameter of the barrel bore if they were to engage the internal grooves (rifling) that gave the round its spin. And it meant that repeat-fire was difficult to achieve, since the only way to feed more rounds into the barrel was through the muzzle. Guns loaded at the breech solved all of these problems.[76] As with so many other innovative designs, breech-loading was a very old idea. But it was very difficult to build well prior to the Industrial Revolution, mainly because it was so hard to make the breech accessible but also sufficiently sealable to contain explosive gases. Multiple, practical solutions to this problem emerged in the first half of the nineteenth century. In the U.S. alone, inventors patented 135 breech-loading firearm designs between 1811-1860.[77]

62. Metallic cartridges represented another breakthrough. Soldiers, especially, had used paper cartridges of powder and ball for generations. But such cartridges were notoriously delicate: liable to get wet and ruined, and far too fragile to use in any kind of ammunition-feeding device. Once percussion caps came into common use, however, it took little imagination to envision a single, metal object that contained primer, powder, and ball all in one. By the 1850s, inventors began moving from concept to practical application. Within a

[76] For the breech-loading revolution, see Headrick, *Tools of Empire*, 96-104.

[77] Alexander Rose, *American Rifle: A Biography* (New York, N.Y: Delacorte Press, 2008), 134.

decade, they realized that in addition to serving as a durable container for primer, powder, and ball, properly-designed metallic cartridges could help overcome stubborn limitations with breech-loading, by completely sealing the breech when fired.[78]

63. Flawed but clever designs began to appear that combined attached or internal magazines, metallic cartridges, and mechanisms for the chambering of cartridges and ejection of spent cases. This line of innovation culminated in 1860 with the world's first reliable firearm with a greater than ten-shot capacity. It was developed by Oliver Winchester's New Haven Arms Company.[79] The "Henry," named after Winchester's brilliant gunmaker, Benjamin Tyler Henry, was an ingenious breech-loading, lever-action rifle that could fire sixteen rounds without reloading (one in the chamber and fifteen from an attached, tubular magazine). Refinements to the Henry resulted in an even better gun: the Winchester Model 1866.[80]

64. Throughout the 1860s, none of the viable alternatives fired more than ten rounds. Practically speaking, then, Henrys and Winchesters were the only large-capacity firearms in circulation in the years surrounding the ratification of the Fourteenth Amendment. How many were there?

65. The McCracken Research Library (part of the Buffalo Bill Center of the West like Ms. Hlebinsky's former institution, the Cody Firearms Museum) possesses a huge archive of material from the Winchester Repeating Arms Company. I had the good fortune to do

[78] Headrick, *Tools of Empire*, 98.

[79] The Spencer Repeating Rifle, also introduced in 1860 and also destined for military and commercial success, was a seven-shot, lever-action rifle.

[80] Herbert G. Houze, *Winchester Repeating Arms Company: Its History & Development from 1865 to 1981* (Iola, WI: Krause Publications, 2004), 42-46.

research in that archive in 2011, while studying the history of the international arms trade. During my research I consulted a letter written by Tom Hall, the longtime curator of the Winchester Museum and a person with an unmatched understanding of the company's history. Responding to a query he had received, Hall's letter enumerated the company's early production totals. According to his figures, the firm produced 74,000 Henrys and Winchester 1866s between 1861 and 1871.[81] Notwithstanding the Winchester's ubiquity in Hollywood westerns, the vast majority of these weapons were made to order for foreign armies and exported abroad. The Ottoman Empire alone purchased 50,000 Model 1866s, and another 14,706 went to military purchasers in Europe, Latin America, and Japan during these years.[82] Based on the Winchester's production figures, that would have left only 9,294 large-capacity firearms for domestic consumption in the United States before 1872. Of those, 8,500 were Henrys purchased by or issued to Union soldiers during the Civil War.[83] These figures suggest (a) that large-capacity firearms went almost exclusively to military buyers through the early 1870s, and (b) that very few were in the hands of private persons that might have used them in ways that attracted regulatory attention.

[81] Specifically, Hall wrote that there were approximately 11,000 Henrys made from 1861-March, 1863; 3,000 rifles with King's improvements, but without company name, from April 1866-March 1867; and 60,000 M1866s between 1866-1871. See Tom Hall to D. C. Cronin, New Haven, May 18, 1951; Box 8, folder 16, Winchester Repeating Arms Company, Office files (MS:20), McCracken Research Library, Cody, WY.

[82] Export numbers are drawn from Houze, *Winchester Repeating Arms Company*, 21, 36–41, 51, 59, 65–66, 71, 73, 75.

[83] For Henrys used in the Civil War, see Pamela Haag, *The Gunning of America: Business and the Making of American Gun Culture* (New York: Basic Books, 2016), 81.

66. The figures also tell us that even a few years after the ratification of the Fourteenth Amendment, large-capacity firearms constituted a tiny percentage of firearms in the United States. How tiny? Some numbers offer perspective. In 1859, on the eve of the Civil War, the U.S. Ordnance Department counted 610,262 shoulder arms in federal arsenals. Combined, the arsenals of individual states likely contained hundreds of thousands more. Domestic producers made 2.5 to 3 million firearms for the Union during the war, while Union purchasing agents imported 1,165,000 European muskets and rifles.[84] The Confederacy imported several hundred-thousand firearms as well.[85] The scale of private gun ownership is less clear, though the U.S. may have had the most heavily armed civilian population in the world after the Civil War. As the figures above make clear, there were certainly more than five million firearms in the U.S. by the early 1870s—perhaps twice as many. But even with the implausibly low figure of five million, that would have meant that large-capacity firearms constituted less than 0.002% of all firearms in the United States as late as 1872.

67. Again, if indeed the total number of guns in circulation in 1872 was considerably higher than five million, large-capacity firearms would have constituted an even more miniscule percentage of all guns in the U.S. Whether the figure was 0.002% or something much lower than that, firearms with magazines holding over 10 rounds were not commonly used for self-defense or for any other purpose in the United States in the 1860s.

III. The Late Arrival and Rapid Regulation of Automatics and Semi-Automatics

[84] Carl L. Davis, *Arming the Union; Small Arms in the Civil War* (Port Washington, N.Y: Kennikat Press, 1973), 39, 64, 106.

[85] C. L. Webster III, *Entrepôt: Government Imports into the Confederate States* (Roseville: Edinborough Press, 2009), 318-20.

A. The era of the slow-load large-capacity firearm, 1870-1900

68. While lever-action rifles took time to make inroads into the U.S. consumer market, they became increasingly popular in the last third of the nineteenth century. Winchester continued to dominate the market. Most other firms that tried to compete in lever-action rifles failed on their own, or were bought out or otherwise outmaneuvered by Winchester's ruthless corporate savvy (the gunmaker Marlin being the only major exception).[86] Other rifle makers experimented with alternative designs. For example, Colt's popular Lightning Slide Action Rifle (around 126,000 produced between 1884-1904) had a twelve- or fifteen-round tube magazine and used a pump-action to cycle rounds into the chamber.[87] Another ingenious Winchester competitor retained the lever-action but incorporated a novel, rotating internal magazine that held twenty-eight or thirty-four rounds. Even with the highest capacity of any repeating rifle ever marketed in the U.S., though, the Evans Lever-Action Rifle enjoyed only modest success in its six-year production run (12,000 produced between 1873-1879).[88]

69. The late nineteenth century was an era of slow-load large-capacity firearms. Winchester lever-action rifles and their large-capacity competitors in the last third of the nineteenth century had fixed magazines. Once a fixed magazine was empty, the shooter had to reload each round, one by one. As with Colt revolvers (which transitioned away from the laborious cap and ball system to faster-loading metallic cartridges in the 1870s, more than a

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[86] For Winchester's dominance, see Pamela Haag, *The Gunning of America: Business and the Making of American Gun Culture* (New York: Basic Books, 2016).

[87] Greener, *The Gun*, 720-21.

[88] For the Lightning Slide Action and the Evans, see *Flayderman's Guide,* 122–23, 694. Of the Evans, Flayderman writes: "Earliest specimens (extreme rarities with no examples known) held 38 rounds."

decade after its competitor Smith & Wesson had done so), this round-by-round loading process put a ceiling on the damage a single shooter could inflict on a group of people. Notwithstanding the success of lever-action large-capacity firearms, that ceiling had not gotten dramatically higher since the 1830s. The magazines of most large-capacity rifles held somewhere between ten to fifteen rounds. A person armed with a pair of seven-shot revolvers could fire fourteen rounds without reloading. With the exception of the remarkable but expensive and short-lived Evans rifle, then, a shooter from the time with a repeating rifle had roughly the same capabilities as a shooter with two revolvers in his hands. There were trade-offs, of course. The repeating rifle often had somewhat more power and always had more range and accuracy. Pistols were concealable and easier to use in some circumstances. (Neither arm had the power, range, or accuracy of bolt-action, single-shot rifles that the U.S. and the strongest European militaries continued to favor.)[89]

70. In other words, the advent of Winchester repeaters and their competitors did not provoke fundamentally different social problems than those that had been accelerating in the U.S. since the proliferation of revolvers and pepperboxes earlier in the century. The changes were of degree, rather than kind. State lawmakers continued to regulate firearms in the name of public safety, as they had since the colonial era. At least forty-eight new laws were passed in the United States between 1868-1903 restricting firearm carry, for example.[90] By the turn of the century, most Americans living in the nation's most populous urban areas were

[89] For the U.S. Military, see for example David F. Butler, *United States Firearms: The First Century, 1776-1875* (New York: Winchester Press, 1971), 152-93.

[90] Frassetto, "Firearms and Weapons Legislation," 24-34.

subject to some form of restrictive carry regulations. (Twenty-one more such laws would be enacted between 1900-1934).[91]

71. Rather than target lever-action rifles, though, lawmakers in this regulatory era usually lumped them together with other kinds of firearms when crafting law. Rifles are invoked alongside other kinds of weapons in Montana's 1879 prohibition against dueling, for instance; in North Carolina's 1869 law against hunting on the Sabbath; in Florida's 1881 law criminalizing the sale of weapons to minors and to those with "unsound minds;" and in unlawful discharge laws in Texas (1871), Wyoming (1879), New Mexico (1886), and Rhode Island (1892).[92] Exciting new historical scholarship on nineteenth-century firearms regulation has made it increasingly clear not only that America has a robust tradition of regulating arms in the name of public safety, but that we have a great deal left to unearth about the breadth and depth of that tradition.[93]

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[91] Saul Cornell, "The Long Arc of Arms Regulation in Public: From Surety to Permitting, 1328-1928," *UC Davis L. Rev.* 55 (2021): 2591–96.

[92] Frassetto, "Firearms and Weapons Legislation," Montana: 39; North Carolina: 92; Florida: 76; Texas: 98; Wyoming: 99; New Mexico: 12; Rhode Island: 97. For a nuanced examination of state and local firearm regulations in the second half of the nineteenth century, one attentive to regional difference and minority viewpoints, see Patrick J. Charles, *Armed in America: A History of Gun Rights from Colonial Militias to Concealed Carry* (Amherst, New York: Prometheus Books, 2018), 122–65.

[93] The historian Brennan Gardner Rivas is producing some of the nation's most exciting and important new scholarship on nineteenth-century firearms regulation. *See e.g.*, Brennan Gardner Rivas, *An Unequal Right to Bear Arms: State Weapons Laws and White Supremacy in Texas, 1836–1900*, 121 *Southwestern Historical Quarterly* 284 (2017); Brennan Gardner Rivas, *Enforcement of Public Carry Restrictions: Texas as a Case Study Symposium: The 2nd Amendment at the Supreme Court: '700 Years of History' and the Modern Effects of Guns in Public*, 55 *U.C. Davis Law Review*, 2603 (2022); Brennan Gardner Rivas, *Perspective:| In the Past, Americans Confronted Gun Violence by Taking Action*, *Washington Post* (June 3, 2022), *available at* https://www.washingtonpost.com/outlook/2022/06/03/past-americans-confronted-gun-violence-by-taking-action/.

72. As slow-load large-capacity firearms, lever-action rifles continue to be popular in the United States today. I am unaware of any law in the nation subjecting to special regulation, notwithstanding their large capacities. Numerous firearms from the late nineteenth century had capacities exceeding ten, in other words, but their slow-load quality made them very different from the firearms commonly subject to regulation today.

73. The era of slow-load large-capacity firearms was different from our own times. To appreciate how different, consider the fact that none of the arms that were commercially available in the United States prior to the twentieth century would have been subject to regulation in New Jersey under the laws in question. Both the large-capacity magazine limitation and the assault weapon regulations pertain to semi-automatic firearms, which, as I explain below, only began entering the market at the very end of the nineteenth century.[94]

74. Slow-load large-capacity rifles seldom attracted particular regulation because, in an era when revolvers had already become so common, they did not represent a fundamental change in how a single armed individual could threaten public safety. But automatic and semi-automatic weapons with detachable magazines, the world's first viable fast-load large-capacity firearms, did.

B. The era of fast-load large-capacity firearms

75. Lever-action or pump-action rifles require energy transferred from human muscle through an internal mechanism to eject a spent casing and chamber a new round. The same is true of single-action revolvers, which require the shooter to pull back the hammer in

[94] Semi-automatic rifles and shotguns were not introduced into the market until the early twentieth century. Two successful semi-automatic pistols predate the turn of the century (the Borchardt C-93, introduced in 1893, and the Mauser C-96, introduced in 1896). But neither of these German-made guns seems to have been popular consumer items in the United States before the turn of the century.

order to rotate the chamber and position a new round for firing. (Double-action revolvers transfer all this work to the trigger, which when squeezed both rotates the chamber and releases the hammer). Automatic and semi-automatic firearms don't rely on human muscle. Instead, their great innovation is to enlist some of the energy released by the first round to eject the spent casing and chamber the next round.

76. Automatic and semi-automatic firearms first started coming on the market in the 1890s (automatic arms continue to fire as long as the trigger is depressed, while semi-automatic arms require the shooter to squeeze the trigger for each round fired). In addition to advances in machine production, materials science, and precision parts, these revolutionary weapons incorporated three specific innovations. The first was the invention of a reliable mechanism using springs and levers to capture the recoil energy of a fired round in order to chamber the next round. That discovery belongs to Hiram Maxim, creator of the famous Maxim machine gun in 1884.[95] The heavy Maxim gun required at least two people to carry and position, but the idea of using recoil to chamber another round was transferrable to smaller, handheld firearms.

77. Smokeless powder was the second innovation. When fired, black powder leaves residue behind that fouls barrels. This was a manageable annoyance in the era before guns could fire several times a second. With the astonishing rates of fire made possible through Maxim's invention (up to six hundred rounds per minute), fouling would be so rapid as to quickly render an automatic fire weapon inoperable.[96] Serendipity intervened to solve

[95] Carmen, *A History of Firearms*, 85-88.

[96] Julia Keller, *Mr. Gatling's Terrible Marvel: The Gun That Changed Everything and the Misunderstood Genuis who Invented It* (New York: Viking, 2008), 222.

this particular problem. In the mid-1880s, right when Maxim was making his breakthrough in harnessing recoil energy, researchers in France perfected a chemical propellant (based on nitrocellulose) that was three times as powerful as black powder, gave off very little smoke, and left behind almost no residue in the barrel. Smokeless powder meant that automatic fire would be a practical technology.[97]

78. Third and finally, automatic- and semi-automatic firearms required a method of feeding cartridges into the weapon. Maxim's machine gun (a heavy device usually placed atop a wheeled carriage) used belts of bullets, stored in crates or boxes. For semi-automatic firearms designed to fire one shot at a time, it would be far more practical to have a magazine. One option was for the weapon to have a fixed magazine: an integral component of the weapon itself, as with the tubular magazines of lever-action rifles. Fixed magazines were impractical for fully automatic weapons, because their high rate of fire would exhaust a fixed magazine almost instantaneously and then the shooter would have to reload, bullet by bullet. But some of the earliest semi-automatic handguns would be designed around fixed box magazines – the Mauser C96, for example (a German arm introduced in 1896).[98]

79. By the time gunmakers began turning their attention to semi-automatic arms in earnest, however, they had another, more appealing option: detachable magazines. Like self-loading mechanisms and smokeless powder, detachable magazines first emerged in the 1880s and began to be integrated into firearms for the consumer market by the end of the century.

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[97] For the development of smokeless powder, see René Amiable, "Scientific Reasoning and the Empircal Approach at the Time of the European Invention of Smokeless Powder," in Brenda J. Buchanan, ed., *Gunpowder, Explosives, and the State: A Technological History* (Aldershot: Ashgate, 2006), 343-54.

[98] John Walter, *Hand Gun Story* (Barnsley: Frontline Books, 2008), 196-98.

The first successful firearm with a detachable magazine had been developed by James Paris Lee, to be used with bolt-action rifles. What made detachable magazines so advantageous is that they dramatically accelerated loading. Rather than reloading a weapon bullet-by-bullet (as with lever-action rifles or revolvers), the shooter simply ejected the spent magazine, inserted a full magazine, and resumed firing.[99]

80. By the early 1890s, then, gunmakers had at their disposal a trio of potent new design features that would become characteristic of most modern automatic and semi-automatic firearms – self-loading mechanisms, smokeless powder ammunition, and detachable magazines. The first pistol to successfully combine all three elements was the Borchardt C-93. Made in Germany in 1893, the Borchardt C-93 had a detachable, 8-round magazine.[100] Competitors were quick to enter the market. John Browning, arguably the most inventive and important of all U.S. gunmakers, finished his first design for a semi-automatic pistol in 1895. Slow to grasp the huge importance of these new guns, Colt declined Browning's design because the firm did not think there would be a domestic market for it. Browning tinkered some more and sold the design to Belgium's Fabrique Nationale ("FN"). FN produced the gun starting in 1900, with a 7-round detachable magazine, and would go on to sell more than

[99] Bolt-action rifles with detachable magazines were adopted by world militaries in the late 1880s and 1890s—though even as late as 1910, neither the United States Army nor any European army used magazines that exceeded ten rounds as standard service weapons. In the ninth edition of his authoritative treatise *The Gun and its Development* (London: Cassell & Co., 1910), W.W. Greener compared the standard service arms of nineteen countries. Only four (Turkey, Switzerland, Great Britain, and Belgium) employed arms with detachable magazines. See table on pp. 736-37.

[100] Walter, *Hand Gun Story*, 140-44.

700,000 of them over the next decade.[101] Colt soon realized its mistake and revived its partnership with Browning, marketing better and better versions of his semi-automatic pistols starting in 1900. These culminated with the M1911, a handgun with a 7-round detachable magazine. The most copied and influential of all modern handguns, several million M1911s have been sold in the past century. Variations of the gun are still in production today.[102]

81. American firms also helped lead the way in the production of semi-automatic rifles. Winchester and Remington both had models out early in the century. As with the early semi-automatic handguns, some designs had fixed magazines and others had detachable magazines. Light, fully automatic guns (so-called "sub-machine guns"), migrated from the battlefield to the U.S. civilian market. The most notorious was the Thompson submachine gun, aka the "Tommy Gun," which had been designed for use in World War I and entered the U.S. market in the 1920s. It was a select fire weapon, meaning it could be set either to automatic or semi-automatic fire. Tommy Guns had box magazines ranging from twenty to thirty rounds, and drum magazines as large as one hundred rounds. Its high price discouraged civilian sales. But this legal, fast-load large-capacity firearm became much sought-after by criminals and law enforcement.[103]

82. Because their detachable magazines enabled shooters to load and reload all at once, rather than round by round, the new fast-load firearms empowered individual shooters to inflict far more damage on more people than had been possible with earlier technologies. So,

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[101] *Id*., 220–28.

[102] *Flayderman's Guide*, 118.

[103] John Ellis, *The Social History of the Machine Gun* (Baltimore: Johns Hopkins University Press, 1975), 149-77.

as they had with the advent of multi-fire pistols in the nineteenth century, lawmakers responded to the novel threat to public safety with legislation. Between 1925 and 1933, at least twenty-eight states passed laws against fully automatic firearms.[104]

83. Despite the great variety of models produced, prior to the 1930s surprisingly few of the new firearms came with magazines that held more than ten rounds. Perhaps partly because large-capacity magazines were so unusual at this time, lawmakers worried about the implications of semi-automatic weapons for public safety do not seem to have conceived of magazines as something they could productively regulate separately from the guns themselves. And yet many clearly thought that the magazine capacity of these firearms was one of the things that made them so dangerous. So those states that did act regulated the arms themselves, often addressing magazine capacity in the process.[105]

84. Of the seven states that passed laws restricting semi-automatic weapons during the 1920s and 1930s, five of them incorporated capacity ceilings into the law. Different states set different limits, presumably reflecting the different circumstances and views prevailing among their constituents. For Ohio the limit was eighteen. Michigan put it at sixteen. Rhode Island set the limit at twelve. Virginia's limit was seven. South Dakota forbade guns "from which more than five shots or bullets may be rapidly, or automatically, or semi-automatically discharged from a magazine." Three other states – South Carolina, Louisiana, and Illinois – crafted laws that leave ambiguity as to whether they only applied to automatic firearms. But all three chose the relatively low figure of

[104] Spitzer, "Gun Law History," 67.

[105] *Id*., 68-71.

eight rounds for their ceiling, something fully automatic weapons could spit out in a single second. That strongly suggests that they, too, had decided to respond to the novel public safety implications of semi-automatic firearms by regulating them.[106]

85. In so doing, these lawmakers acted consistently with American tradition and practice dating back to the early colonial era.

IV. The Changing Distinction between Civilian and Military Arms in the United States

86. Ms. Hlebinsky's report contains several assertions about the relationship between civilian and military firearms. I want to conclude by addressing an important error of fact and interpretation in her report: the claim that "until recently, civilians often had superior firearms than the military." Neither part of that statement is correct. Before turning to her timing error, let me explain why it is misleading to frame the issue as one involving superior vs. inferior arms.

87. Firearms are tools. Hammers aren't superior to screwdrivers in any absolute sense. Hammers are only superior to screwdrivers for particular uses. Similarly, while the firearms most commonly owned by civilians during the colonial and early national eras were different from those most commonly used by the military, they weren't superior to military arms in any absolute sense. They were just intended for different uses. The essential question, then – one largely absent from Ms. Hlebinsky's report – is *superior for what*?

88. In the eighteenth century, most European militaries equipped soldiers with relatively heavy, large-caliber, smoothbore long-arms designed to accept a bayonet. For instance, the standard service arm for most of Britain's eighteenth-century army, the Long

[106] *Id*.

Land Pattern Musket (the "Brown Bess"), weighed around eleven pounds, had a forty-six inch, .760 -.780 caliber barrel. This clunky but formidable weapon was designed to withstand the rigors of campaigning, to deliver significant stopping power, and to accept a socket bayonet so that musketeers could double as pikemen in battle.[107] Most civilians during the colonial and early national period had other priorities. They wanted firearms that were easier to handle, had milder recoil, weighed less than a Brown Bess (often just over half as much), and had smaller calibers and therefore generally consumed less powder per shot. Such "fowlers," "fusils," "firelocks," and "trade guns" also cost less than "muskets," a term informed observers of the day usually reserved for military long-arms.[108] Settlers in western Pennsylvania and Virginia often had rifles, too. Skilled gunsmiths in these regions were producing distinctive, high-quality rifles by the eighteenth century, often with imported locks (though not from "parts kits ordered from overseas" (Hlebinsky Report, p. 17), which didn't exist in this era). Rifles had greater range and accuracy but took two-three times as long to reload as smooth-bore weapons.[109] That trade-off made sense if the goal was hunting deer. But painfully slow reloading times could be deadly in combat unless the shooter had reliable cover.

89. Which type of arm was superior? Given their needs, most civilians thought that lighter arms were superior to muskets. But colonial and early national leaders trying to organize forces against regular armies had different needs, and complained bitterly about

[107] For an authoritative discussion of the evolution and variations, see De Witt Bailey, *Small Arms of the British Forces in America, 1664-1815* (Woonsocket: Andrew Mowbray, Inc., 2009), 13-23.

[108] Sweeney, "Firearms, Militias, and the Second Amendment," 330-31.

[109] *Id*., 342.

the inferiority of most civilian arms. During the Seven Years' War, for example, one despairing official reported that the arms "which belong to private persons are mostly poor and undersized and unfit for an expedition."[110] A little more than a decade later, when he was first trying to forge a revolutionary army out of New England's militiamen, General Washington complained that "of Arms those brought in by the Soldiers are So very indifferent that I Cannot place Confidence in them."[111]

90. Superiority was context dependent, in other words. So, if the purpose was pest control or small game hunting, lighter guns were superior. The same was true for patrolling slave plantations or waging long-distance campaigns through woodlands against Indigenous people. If the purpose was prevailing in battle against European armies, the bulkier muskets were superior. If the purpose was hunting large game, defending a fort or stockade against attackers, or targeting specific, high-value individuals on a battlefield, rifles were superior. While they were all but nonexistent in America at the founding, even the era's flawed repeating arms were superior in certain contexts. If the purpose was entertaining and impressing rich friends at your English country estate, a polished, inlaid Lorenzoni magazine repeater would certainly have been superior (for the few who could find and afford one). If the purpose was murdering a large number of strangers in a school or a church or at a public event, nothing would have sufficed. There was no functioning firearm then in existence that would enable someone to do that.

[110] Quote is from *Id*., 331.

[111] Washington to Major General Richard Montgomery, Cambridge, January 12, 1776, https://founders.archives.gov/documents/Washington/03-03-02-0051

91. In sum, early Americans recognized a distinction between military and civilian arms. The line between the two was porous, partly because the most important differences were in degree rather than kind. In a context where few had ever laid eyes on a repeating firearm, virtually every gun one might encounter was a single-shot muzzle-loader that was time-consuming to reload. While civilians preferred lighter arms and militaries preferred heavier arms, the differences and trade-offs were modest. Arms favored by civilians were sometimes put to military use, and arms favored by militaries were sometimes owned by civilians.

92. The porous boundary between civilian and military arms endured through the nineteenth century, when firearms technology underwent dramatic change. The War Department (today known as the Department of Defense) periodically auctioned off decommissioned firearms from federal stores. Many were scooped up by wholesalers who then exported them abroad. But huge numbers (nearly all of them single-shot muskets or rifles) wound up in civilian hands.[112] Some important innovations (percussion ignition, breech loading, and metallic cartridges, for example) found their way into civilian and military arms alike. Occasionally innovations held far more appeal for one sector than the other – not because they were superior in any general sense, but because they were better suited to particular purposes. Pepperbox pistols, for example, appealed to some civilians because they conferred concealable repeat fire capabilities and were effective in close quarters. But most pepperboxes lacked the range or power that would make them remotely as appealing to soldiers or cavalry as the more expensive Colt revolvers. Lever-action rifles

[112] Such auctions even predate the Constitution. See for example the *Journals of the Continental Congress* for Friday, July 30, 1784 (p. 613).

became popular consumer items in the last third of the century, and were esteemed by cavalry in numerous countries. But they did not have the same appeal for the world's top infantries, who prized the greater range and power delivered by the best bolt-action rifles.[113]

93. The soft boundary between military and civilian arms began to harden in the early twentieth century, when the dramatic technological change of automatic and semi-automatic weapons brought about unprecedented social concerns. Contrary to Ms. Hlebinsky's assertion, it was not the 1986 Hughes Act that began to limit civilian access to military weaponry. That happened much earlier. As explained above, dozens of states passed laws regulating automatic and semi-automatic firearms during the 1920s and 1930s. None of these laws applied to the U.S. military.

94. In 1934, Congress hardened the boundary even further with the National Firearms Act. Among other things, the NFA created a tax and licensing regime designed to all but eliminate certain types of weapons from civilian life in the United States. Elaborated upon with subsequent legislation, and enhanced by numerous state-level laws, the NFA has been highly consequential. Among other things, federal law regulates the importation and sale of machine guns; silencers; tracer, incendiary, and armor-piercing ammunition; and certain large-caliber weapons. It also regulates the importation and sale of a large swath of weapons under the umbrella of "destructive devices," including grenades, grenade launchers, and artillery.[114] None of these regulations have ever applied to the U.S. military.

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[113] See note 97, *supra*.

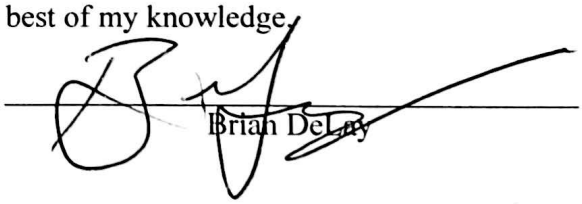
[114] See U.S. Code, Title 26, Chapter 53, "Machine Guns, Destructive Devices, and Certain Other Firearms," available here: https://www.law.cornell.edu/uscode/text/26/subtitle-E/chapter-53

Therefore, more than a half-century earlier than Ms. Hlebinsky claims, state and federal governments began limiting civilian access to weapons used by our military.

95. Have these regulations, which have shaped the U.S. domestic arms market for nearly a century now, deprived civilians of the most "superior" firearms? As has been true throughout our nation's history, that depends entirely on what civilians want to do with their weapons. If the aim is to be equipped to hunt, target shoot, provide for home defense, or carry a gun outside the home for self-protection, then there are superior firearms available than those that the law has long reserved for the military. If the aim is to be equipped to quickly inflict devastating injuries on a large number of people, then these regulations have indeed been an obstacle.

96. When I read complaints about civilians lacking access to "superior" weaponry, therefore, I reflect on our nation's long history of regulating firearms in the name of public safety and wonder, superior for *what*?

I declare that the foregoing is true and correct to the best of my knowledge.



Dated: July 11, 2023

EXHIBIT A

Brian DeLay

University of California
3229 Dwinelle Hall
Berkeley, CA 94720-2550
https://history.berkeley.edu/brian-delay
delay@berkeley.edu

ACADEMIC POSITIONS

- Preston Hotchkis Chair in the History of the United States, UC Berkeley: 2016-Present
- Associate Professor of History, University of California, Berkeley: Fall 2010 - Present
- Assistant Professor of History, University of California, Berkeley: Fall 2009 – Spring 2010
- Assistant Professor of History, University of Colorado, Boulder: Fall 2004 – Spring 2009
- Lecturer in History, Harvard University: Spring 2004

EDUCATION

-Ph.D., Harvard University, Cambridge, MA: March, 2004
-MA, Harvard University: June, 1998
-B.A., University of Colorado, Boulder, *summa cum laude:* December, 1994

WORK IN PROGRESS:

- "The Myth of Continuity in American Gun Culture," law-review article in-progress.
- "Aim at Empire: American Revolutions through the Barrel of a Gun, 1750-1825," book project under contract with W.W. Norton. 167k words drafted as of 6/22.
- "Means of Destruction: Guns, Freedom, and Domination in the Americas before World War II," book manuscript under contract with W.W. Norton. Research nearly complete.
- "PATH: The Project on Arms Trade History." Since 2008, I have been working with student research assistants to quantify the global arms trade, from the Napoleonic Wars to WWI. We have been extracting detailed import and export data from manuscript sources and, especially, from annual customs reports published by the main arms-exporting states: The United Kingdom, the United States, Belgium, and France (Germany and Spain still underway). We are nearly finished locating sources and doing the laborious work of data entry. Our relational database now has nearly 112,000 entries capturing the global movement of all kinds of war material, from percussion caps to artillery, from 1815-1915. We will soon shift to data analysis and begin applying for external funding to turn the dataset into an online tool freely available to researchers around the world.

PUBLICATIONS AND RESEARCH

Refereed Publications

- "The Arms Trade & American Revolutions," forthcoming (Sept. 2023) in the *American Historical Review*.
- "Foreign Relations between Indigenous Polities, 1820-1900," in Kristin Hoganson and Jay Sexton, eds., *The Cambridge History of America and the World*, Vol 2: 1812-1900 (Cambridge University Press, 2022), 387-411.
- "Indian Polities, Empire, and Nineteenth-Century American Foreign Relations" *Diplomatic History* 39:5 (December 2015), 927-42.

Refereed Publications (cont.)

- "Watson and the Shark," chapter in Brooke Blower and Mark Philip Bradley, eds., *The Familiar Made Strange: American Icons and Artifacts after the Transnational Turn* (Ithaca: Cornell University Press, 2015).
- "Blood Talk: Violence and Belonging in the Navajo-New Mexican Borderland," in Juliana Barr and Edward Countryman, eds., *Contested Spaces of Early America*, University of Pennsylvania Press, 2014, pp. 229-256.
- Editor, *North American Borderlands*. Routledge, 2012.
- *War of a Thousand Deserts: Indian Raids and the U.S.-Mexican War*. New Haven: Yale University Press, 2008 [paperback, 2009].
- "The Wider World of the Handsome Man: Southern Plains Indians Invade Mexico, 1830-1846," *Journal of the Early Republic* 27 (March, 2007), 83-113
- "Independent Indians and the U.S.-Mexican War," *American Historical Review* 112 (Feb., 2007), 35-68.

Other Publications:

- "American Guns, Mexico's Trials," *Bulletin of the American Academy of Arts and Sciences*, Spring, 2020
- "A Misfire on the Second Amendment," extended review of Roxanne Dunbar-Ortiz, *Loaded: A Disarming History of the Second Amendment* for *Reviews in American History* 47:3, Sept. 2019
- Co-author with James West Davidson, William E. Gienapp, Christine Leigh Heyrman, Mark H. Lytle, and Michael B. Stoff, *Experience History: Interpreting America's Past* [Formerly *Nation of Nations: A Narrative History of the American Republic*], McGraw-Hill (9th ed., 2019). *Concise version: *US/A History* (9th ed., 2022).
- "How the U.S. Government Created and Coddled the Arms Industry," *The Conversation*, October 2017
- "How Not to Arm a State: American Guns and the Crisis Of Governance In Mexico, Nineteenth and Twenty-First Centuries" [24th Annual W.P. Whitsett Lecture], *Southern California Quarterly* 95:1 (Spring 2013), pp. 5-23.
- "Oportunismo, ansiedad, idealismo: los impulsos Estadunidenses durante la intervención Francesa en México," in Jean Meyer, ed., *Memorias del Simposio Internacional 5 de Mayo*, El Colegio de Puebla, 2013, pp 269-288.
- "Comanches in the Cast: Remembering Mexico's 'Eminently National War,'" in Charles Faulhaber, ed., *The Bancroft Library at 150: A Sesquicentennial Symposium*, Berkeley: University of California Press, 2011.
- "How Indians Shaped the Era of the U.S.-Mexican War," abbreviated version of Independent Indians and the U.S.-Mexican War," in Pekka Hämäläinen and Benjamin H. Johnson, eds., *Major Problems in the History of North American Borderlands*, Wadsworth, 2011.
- Response to Daniel Walker Howe, Andrés Reséndez, Ned Blackhawk, and Leonard Sadosky's essays in H-SHEAR roundtable on *War of a Thousand Deserts*, Nov. 2010.

Other Publications (cont.)

- Top Young Historian essay, Historians News Network, October 2010.
- "Forgotten Foes," *Berkeley Review of Latin American Studies* (Fall 2010), 14-19.
- "James Madison and the Scolds," Review of J. C. A. Stagg, *Borderlines in the Borderlands: James Madison and the Spanish American Frontier, 1776-1821*, *Passport* 40:3 (January 2010).
- "Why Mexico Fought," review of Timothy J. Henderson, *A Glorious Defeat: Mexico and its War with the United States*, *Diplomatic History* 33:1 (January 2010).
- "19th Century Lessons for Today's Drug War Policies," *The Chronicle Review*, Tuesday, July 28, 2009,
- "It's Time We Remembered the Role of Indians in the U.S.-Mexican War," *History News Network*, 3/9/2009
- "War of a Thousand Deserts," on *The Page 99 Test*,
- "Navajo," "Popé," and "Pueblo Indians," in Billy G. Smith, ed. *Colonization and Settlement (1585-1763)*, Volume 2 in the 10-volume *Facts on File Encyclopedia of American History* (2003)
- "Narrative Style and Indian Actors in the Seven Years' War," *Common-Place: The Interactive Journal of Early American History*, 1 (1), September 2000.

PRIZES, HONORS, & AWARDS

- Visiting Scholar, University of Melbourne, October 2017
- Fulbright Distinguished Lecturer, Doshisha American Studies Seminar (Kyoto), 2014
- Bryce Wood Book Award for the outstanding book on Latin America in the social sciences and humanities published in English, Latin American Studies Association, 2010
- HNN "Top Young Historian," November 2010
- W. Turrentine Jackson (biennial) Award for best first book on any aspect of the history of the American West, Western History Association, 2009
- Robert M. Utley Award for best book published on the military history of the frontier and western North America, Western History Association, 2009
- Southwest Book Award, sponsored by the Border Regional Library Association, 2009
- James Broussard Best 1st book prize, Society for Historians of the Early American Republic, 2008
- Norris and Carol Hundley Best Book Award, Pacific Coast Branch of the AHA, 2008
- The Sons of the Republic of Texas Summerfield G. Roberts Best Book Award, 2008
- Finalist, Francis Parkman Prize from the Society of American Historians, 2008
- Finalist for the Clements Prize for the Best Nonfiction Book on Southwestern Americana, 2008
- Honorable Mention, TSHA Kate Broocks Bates Award for Historical Research, 2008
- Finalist for the PROSE Award in the U.S. History and Biography/Autobiography category, sponsored by the Association of American Publishers, 2008
- Organization of American Historians Distinguished Lecturer, 2008-2011
- Bolton-Cutter Award for best borderlands article, Western History Association, 2008
- Robert F. Heizer Prize for the best article in the field of ethnohistory, 2008

PRIZES, HONORS, & AWARDS (cont.)

- CLAH Article Prize, Conference on Latin American History, 2008
- Stuart Bernath Article Prize, Society for Historians of American Foreign Relations, 2008
- Phi Alpha Theta/Westerners International Prize for Best Dissertation, 2005
- Harold K. Gross Prize from Harvard University for the dissertation "demonstrating the greatest promise of a distinguished career in historical research," 2004
- University of Colorado Residence Life Academic Teaching Award, 2005
- Derek Bok Center Awards for Excellence in Teaching, Spring 1999 and Fall 1999

GRANTS AND FELLOWSHIPS

- John Simon Guggenheim Foundation Fellowship, 2019-2020
- Marta Sutton Weeks Fellow, Stanford Humanities Center, 2019-2020
- Center for Advanced Studies in Behavioral Sciences Fellowship, 2019-2020 (declined)
- American Council of Learned Societies Fellowship, 2017-2018
- Harry Frank Guggenheim Foundation Fellowship, 2013-14'
- UC Humanities Research Fellowship Grant, 2013-14'
- UC Berkeley CORE Research Bridging Grant, 2012-14'
- Charles A. Ryskamp Research Fellowship, American Council of Learned Societies, 2010-2011
- Donald T. Harrington Fellowship, UT Austin, 2009-2010 (Declined).
- University of Colorado Graduate Committee on the Arts and Humanities Research Grant, 2008.
- American Philosophical Society / British Academy Fellowship, 2008.
- Junior Faculty Development Award, University of Colorado, 2007.
- Bill and Rita Clements Research Fellowship for the Study of Southwestern Americana, Full Year, Clements Center, Southern Methodist University, Dallas, TX, 2005-2006.
- Postdoctoral Fellowship, Full Year, Huntington Library, San Marino, CA, 2005-2006 (Declined)
- Postdoctoral Fellowship, Full Year, Newberry Library, Chicago, IL, 2005-2006 (Declined)
- Packard Foundation Dissertation Finishing Grant, 2002-2003
- American Philosophical Society, Philips Fund Grant for Native American Research, 2001
- David Rockefeller Center for Latin American Studies Summer Grant 2001
- Department of Education Foreign Language Area Studies Grant, 2000-01
- Mellon Summer Field Research Travel Grants, 1999, 2000, 2001
- Harvard History Department Summer Travel Grant, 2000, 2001
- Graduate Society Term Time Research Fellowship, Spring 2000
- Harvard Graduate Student Council Summer Travel Grant, 1999
- The Charles Warren Center Fellowships for Summer Research, 1998, 1999
- The Graduate Society's Summer Fellowship, Harvard University, 1998
- General Artemas Ward Fellowship, Harvard University, 1996-97, 1997-98

BOOK REVIEWS

- Review of Jonathan Grant, *Between Depression and Disarmament: The International Armaments Business, 1919-1939*, in the *American Historical Review* 25:3, June 2020
- Review of David J. Silverman, *Thundersticks: Firearms and the Violent Transformation of Native America*, in the *American Historical Review*, Oct. 2017
- Review of Rachel St. John, *Line in the Sand: A History of the Western U.S.-Mexico Border*, in the *Pacific Historical Review*, Aug. 2012.
- Review of *Bridging National Borders in North America: Transnational and Comparative Histories*, Edited by Benjamin H. Johnson and Andrew R. Graybill, *Hispanic American Historical Review*, Feb. 2012.
- Review of *Fiasco: George Clinton Gardner's Correspondence from the U.S.-Mexico Boundary Survey, 1849-1854*. Edited David J. Weber and Jane Lenz Elder, *New Mexico Historical Review* 86:3, Summer 2011, 526-28.
- Review of Juliana Barr's *Peace Came in the Form of a Woman: Indians and Spaniards in the Texas Borderlands*, for the *American Historical Review* 113 (June 2008), 878-79.
- Review of Samuel Truett's *Fugitive Landscapes: The Forgotten History of the U.S.-Mexican Borderlands*, for *Labor: Studies of Working-Class History of the Americas* 4:4 (2007), 130-32.
- Review of Gary Clayton Anderson's *The Conquest of Texas: Ethnic Cleansing in the Promised Land, 1820-1875*, for the *Journal of American History* 93:2 (2006), 530-31.
- Review of Samuel Truett and Elliott Young, eds., *Continental Crossroads: Remapping U.S.-Mexican Borderlands History*, for the *Hispanic American Historical Review* 86:4 (2006), 864-65.
- Review of Rosemary King's *Border Confluences: Borderland Narratives from the Mexican War to the Present*, for *New Mexico Historical Review*, Fall 2005.
- Review of Edward A. Goodall, *Sketches of Amerindian Tribes, 1841-1843,* for *Itinerario: The European Journal of Overseas History*, Fall 2004 (28:3).
- Combined review of Alex D. Krieger's *We Came Naked and Barefoot: The Journey of Cabeza de Vaca Across North America* and Rolena Adorno's and Patrick Charles Pautz's *The Narrative of Cabeza de Vaca* for the *Southwestern Historical Quarterly,* April 2004.
- Review of Richard Flint's *"Great Cruelties Have Been Reported:" The 1544 Investigation of the Coronado Expedition*, for the *Southwestern Historical Quarterly,* October 2003.
- Review of Allen G. Hatley's *The Indian Wars in Stephen F. Austin's Texas Colony*, 1822-1835, for the *Southwestern Historical Quarterly*, October 2001.

PRESENTATIONS & INVITED TALKS

- "What a Junk-Shop Musket has to say about the American Revolution," presentation at Approaching American Revolutions Symposium, USC, May 2023
- "Why Dragging Canoe Sold Kentucky," paper presentation at the Western History Association Conference, San Antonio, TX Oct. 2022
- Roundtable participant for "After 1800: Rethinking Revolution and Counter-Revolution in the Atlantic World," USC/Écoles des Hautes Études en Sciences Sociales, June 2022

PRESENTATIONS & INVITED TALKS (cont.)

- Roundtable participant for "Empire and U.S. Foreign Relations," Society for Historians of American Foreign Relations, June 2022
- "Tribe and Nation in North America," comment for roundtable on Sumit Guha's *Tribe and State in Asia through Twenty-Five Centuries*, Institute for Historical Studies, UT Austin, November 2021.
- "What is History Now," Roundtable participant at UC Berkeley History Colloquium, October 2021
- "Tsiyu Gansini's Predicament: Guns, Ammunition, & Cherokee Choices before the Revolution," Rocky Mountain Seminar in Early American History, Oct., 2021
- "Aim at Empire," talk at the UC Berkeley Institute for International Studies, Sept. 2021
- Roundtable participant in "the U.S.-Mexican Borderlands" for Janet Napolitano and Daniel Sargent's class "Intro to Security Policy," GSP, Berkeley, Sept. 2021
- "Arms Trading and American Revolutions," paper for roundtable on Transnational Revolutionary History, Society for Historians of the Early American Republic, July 2021
- Roundtable on Armed Conflict and Military History, Society for Historians of American Foreign Relations annual conference, June 2021.
- "Guns Across Borders," presentation at Revolutions Across Borders symposium, Newberry Library, June, 2021.
- "Indigenous Agency, Whiggish History, and 'the Conquest of Mexico,'" American Historical Association, Jan. 2021
- "Arms Trading and the Fates of American Revolutions," invited paper given in the Cambridge University American History Seminar, March 1, 2021
- "Indigenous Agency, Whiggish History, and 'the Conquest of Mexico,'" Conference on Latin American History, Jan. 2021
- "Aim at Empire," presentation at the Stanford Humanities Center, December 2019
- "America's Guns, Mexico's Trials," Morton Mandel Public Lecture given at the invitation of the American Academy of Arts and Sciences, Berkeley, CA, Nov. 20, 2019
- "Arms Trading & New World Decolonization," paper presented at University College, London, May 2019.
- "The Texas Gun Frontier & the Travails of Mexican History," keynote at the 1st Biennial Symposium on Borderlands & Borders, Texas A&M University, San Antonio, April 2019
- "Guns and Revolution: The Arms Trade and the First Global Wave of Decolonization," Boston College, September 2018
- "Migration and the History of Immigration Enforcement on the U.S.-Mexican Border," at conference on Borders, Borderlands, and Migration, Institute of Slavic, East European, and Eurasian Studies and the Central European University, UC Berkeley, Sept. 2018
- "Shoot the State," roundtable presentation at the Western History Association, Nov. 2017
- "The Texas Gun Frontier and the Travails of Mexican History," Gary L. Nall Lecture, West Texas A&M, October 2017
- "Guns and Revolution: The Arms Trade and the Making of American Revolutions, 1774-1825," University of Melbourne, October 2017

PRESENTATIONS & INVITED TALKS (cont.)

- "Dam-Breaking: How the Arms Trade Enabled the First Global Wave of Decolonization, 1775-1825," New York University, September 2017
- "The Most Dangerous Man You've Never Heard Of," invited presentation at symposium "Small Arms, Big Business: Trading Arms - Political, Cultural and Ethical Dimensions in Historical and Global Perspectives," Zentrum für Interdisziplinäre Forschung (ZIF), Bielefeld, Germany, June 2017.
- Organizer/chair and presenter for roundtable "Arsenal to the World: The Missing History of the American Arms Trade," OAH April 2017
- "The Ungovernable Rio Grande," Cal History Homecoming talk, February 2017
- "The Texas Gun Frontier and the Travails of Mexican History, or, No More Weapons! (Unless they're for Us)," CENFAD Colloquium, Temple University, January 2017
- "The Texas Gun Frontier and the Travails of Mexican History, or, No More Weapons! (Unless they're for Us)," University of Connecticut, October, 2016
- "Dambreaking: Guns, Capitalism, and the Independence of the Americas," Harvard University, October 2016
- "How Transimperial Arms Bazaars Stabilized Instability in the Greater Caribbean," Rothermere Institute, Oxford University, May 2016
- "The International Arms Trade and the Brittle State in Mexico, 1810-1920," University of Chicago Latin American Seminar, December 2015
- "Dambreaking: Guns, Capitalism, and the Independence of the Americas," Northwestern University, December 2015
- "Guns and the Making of the Modern Americas," Stanford University, November 2015
- "The Texas Gun Frontier and the Travails of Mexican History," UT Austin, November 2015
- "Dambreaking: Guns, Capitalism, and the Independence of the Americas," University of Cincinnati, September 2015
- "Dambreaking: Guns, Capitalism, and the Independence of the Americas," Society for Historians of American Foreign Relations, Conference Keynote, June 2015
- "War of a Thousand Deserts," San Jacinto Symposium, Houston, TX, April 2015
- "Dambreaking: Guns, Mercantilism, and the Demolition of Europe's America," the James P. Jones endowed lecture, Florida State University, March 2015
- "Dambreaking: Mercantilism, Armaments, and the Demolition of Europe's America," Indiana University, October 10, 2014
- "Gotham's Gun Barons: New York City Arms the Americas, 1865-1934," Doshisha University, Kyoto, Japan, July 25, 2014
- "How Borderland Indians Shaped the Era of the U.S.-Mexcan War," Keynote address for the 2014 Doshisha American Studies Seminar, Kyoto, July 26, 2014
- "War and Trade," Roundtable on new histories of trade, Society for Historians of American Foreign Relations, Lexington, June 2014
- "Gotham's Gun Barons: New York City Arms the Americas, 1865-1934," Cambridge University, November 25, 2013
- "A Protest of Arms: Guns and the Brittle State in Mexico, 1810-1920," Cambridge University Borderlands Workshop, November 11, 2013

PRESENTATIONS & INVITED TALKS (cont.)

- "Gotham's Gun Barons: New York City Arms the Americas," Oxford University, Oct 2013
- "Marcellus Hartley: The Most Dangerous Man You've Never Heard Of," OAH April 2013
- "A Good Story," invited presentation to admitted students at Cal Day, April 20, 2013
- "Beware the Metanarrative; or, How I Acquired My Resistance to Resistance," Kaplan Lecture, University of Pennsylvania, March 2013
- "Domestic Dependent Notions: American Indians and the First Few Pages of American Empire," American Studies Association meeting, San Juan, Nov. 2013
- "Indian History and the History of American Foreign Relations," Society for Historians of American Foreign Relations annual conference, June 2012
- "How Not to Arm a State: American Guns and the Mexican National Project, 1810-1920," Society for Historians of American Foreign Relations annual conference, June 2012
- "Opportunism, Anxiety, and Idealism: U.S. Impulses during the French Intervention in Mexico," invited paper at el Simposio Internacional 5 de Mayo de Mexico, Biblioteca Palafoxiana, Puebla, Mexico, May 2012.
- "How Not to Arm a State: American Guns and the Mexican National Project, 1810-1920," Organization of American Historians annual conference, April 2012
- Chair, roundtable on the state of the field in U.S.-Mexico Borderlands History, Organization of American Historians annual conference, April 2012
- "So Far From God, So Close to the Gun Store: Borderlands Arms Trading and the Travails of Mexican History," 26th Annual W.P. Whitsett Lecture, CSU Northridge, March 2012
- "War of a Thousand Deserts," at the Tattered Cover Bookstore, Denver, CO, March 2012
- "Frontiers, Borderlands, and Transnational History," Huntington Library symposium on the Significance of the Frontier in an Age of Transnational History, Feb. 2012 [Audio in file#2]
- "Sailing Backwards on Mexico's 'Iron River of Guns': The Political Economy of the Arms Trade in the 19th and 21st Century's, Harvard Kennedy School, Feb. 2012
- "The Drug War and Borderlands History," Cal Alumni Day, Oct. 2011.
- "Blood Talk: Violence and Belonging in the Navajo-New Mexican Borderland," invited presentation at Stanford University's Comparative Wests Seminar, April 2011
- "Blood Talk: Violence and Belonging in the Navajo-New Mexican Borderland," invited talk for round two of Contested Spaces in Early America symposium, Clements Center for Southwest Studies, Southern Methodist University, Dallas, TX, April, 2011
- "Blood Talk: People and Peoples in the Navajo-New Mexican Borderland," invited talk at UCLA's American Indian Studies Center, March 2011
- "Blood Talk: People and Peoples in the Navajo-New Mexican Borderland," invited talk presentation the USC-Huntington Early Modern Studies Institute and the Autry Museum of Western Heritage, March 2011
- "People and Peoples in Borderland Relations: Blood Talk in New Mexico," invited talk for Contested Spaces in Early America symposium, McNeil Center for Early American Studies, University of Pennsylvania, Philadelphia, PA October 2010
- "How Indians Shaped the U.S.-Mexican War," invited talk for the Bay Area Latin America Forum, Berkeley, CA September 2010
- "Indians and the U.S.-Mexican War," invited talk at University of North Texas, Sept. 2010

PRESENTATIONS & INVITED TALKS (cont.)

- "Patterns of Violence in Navajo-New Mexican Relations," Pacific Coast Branch of the American Historical Association annual meeting, Santa Clara CA, August 2010
- "States and Stateless Peoples in George Herring's *From Colony to Superpower*," Society for Historians of American Foreign Relations annual meeting, Madison, WI, June 2010
- "Indians, Politics, and 19th-Century American Empire," UC Berkeley-Stanford-UC Davis faculty dinner, April 2010
- "War of a Thousand Deserts," invited Keynote Address to the James Rawley Conference in the Humanities, University of Nebraska, Lincoln, April 2010
- "19th Century Lessons for Today's Drug War Policies," History as a Resource for Decision Making, UC Berkeley, March 2010
- "Comanches in the Cast: Recovering Mexico's 'Eminently National War, 1830-1846," Bancroft Sesquicentennial Symposium, Berkeley, CA, March 2010.
- "Mexico, Native Polities, and the Continuous 19th Century American Empire," invited talk for the Harvard Symposium on 19th Century Empire, Cambridge, MA April 2009
- "War of a Thousand Deserts: How Indians Shaped the Era of the U.S.-Mexican War," paper presented to the El Paso History Museum, February 2009
- "War of a Thousand Deserts: How Indians Shaped the Era of the U.S.-Mexican War," paper presented at the Texas Community College Teachers Association Conference, Austin, Feb. 2009
- "Putting Indians into the U.S.-Mexican War," paper presented at the Organization of American Historians annual meeting, New York, March 2008.
- "Military History and Non-State Peoples," roundtable paper presented at the American Historical Association conference, Washington D.C., Jan. 2008.
- "The French and Indian War," public talk for the High Plains Chautauqua, Greeley, CO, Aug. 8, 2007
- "The Comanche Lens: Seeing Nation States through Tribes on the U.S.-Mexican Borderlands," invited talk at the University of San Diego Trans-Border Institute, April. 2007.
- "The Comanche Lens: Seeing Nation States through Tribes on the U.S.-Mexican Borderlands," invited talk at the George and Anne Richards Civil War Era Center, Penn State University, Jan. 2007.
- "Independent Indians, the U.S.-Mexican War, and the Reshaping of North America," paper presented at the American Historical Association conference, Atlanta, GA, Jan. 2007 (*Panel organizer*)
- **"**Opportunity Costs: Southern Comanches between Mexico and Texas, 1836-1846," paper presented at the Filson Institute's Comparative Borderlands Conference, Louisville, KT, Oct. 2006.
- "The War of a Thousand Deserts: Indians, the U.S.-Mexican War, and the Reshaping of North America," Clements Center Brown Bag series, Southern Methodist University, Feb. 2006.
- "Independent Indians and Borderlands Scholarship in the Americas" roundtable presentation at the Conference on Latin American History, Philadelphia, PN, Jan. 2006.

PRESENTATIONS & INVITED TALKS (cont.)

- "Comanches in the Cast: Remembering Mexico's 'Eminently National War,' 1830-1846," paper at the Latin American Studies Association Conference, Los Vegas, NV Oct. 2004
- Invited comment on Marie Duggan's "Franciscan Missions as Institutions of Economic Development: The Case of California, 1769-1832," at the Boston Area Latin American Seminar, Dec. 2003
- Invited comment on David J. Weber's "Spaniards and their Savages in the Age of Enlightenment," at the Boston Area Latin American Seminar, Oct. 2002.
- "Mexicans, Indians, and Anglo-Americans: Ethnic Conflict and Territorial Expansion, 1776-1854," paper presented at the Harvard Ethnic Studies Conference, Cambridge, MA, Feb. 2002.
- "Americans Watching: Savage Indians, Suffering Mexicans, and Manifest Failures, 1835-1854," paper presented at the American Historical Association conference, San Francisco, Jan. 2002.
- "The War of a Thousand Deserts: Indian Power & the Contest for Mexico, 1835-1854," paper presented at the Conference on Latin American History, San Francisco, Jan. 2002
- "Indian Power and the Fragmentation of Northern Mexico, 1835-1846," paper presented at the Western History Association Conference, San Diego, CA, Oct. 2001. (*Panel organizer*).
- "Americans Watching: Savage Indians, Suffering Mexicans, and Manifest Failures, 1835-1854," paper presented at Global America: The New International History Conference, Harvard, April 2001.
- Commentator at roundtable discussion of Fred Anderson's *Crucible of War* at the Charles Warren Center for Studies in American History, Harvard University, Feb. 2000.

CONSULTING

- Washington D.C.
  - Submitted declaration for the Attorney General's Office of Washington D.C. in defense of district law limiting high-capacity gun magazines in Hanson et al., v. District of Columbia, Case No. 22-cv-02256 (D.D.C.), Nov. 2022.
- Oregon
  - Submitted declaration as expert witness for the Attorney General's Office of the State of Oregon in defense of state law limiting high-capacity gun magazines in Joseph Arnold et al., v. Tina Kotek, et al., No. 22CV41008 (Harney Cnty. Cir. Ct.), Dec. 2022. Testified remotely in preliminary injunction trial, Dec. 2022.
  - Submitted declaration for Attorney General's Office of the State of Oregon in defense of state law limiting high-capacity gun magazines in *Oregon Firearms Federation et al. v. Tina Kotek et. al.*, 2:22-cv-01815-IM (D. Ore.) (lead case); Mark Fitz, et al., v. Ellen F. Rosenblum, et al., 3:22-cv-01859-IM (D. Ore.) (trailing case); Katerina B. Eyre, et al., v. Ellen F. Rosenblum et al., 3:22-cv-01862-IM (D. Ore.) (trailing case); and Daniel Azzopardi, et al., v. Ellen F. Rosenblum, et al., 3:22-cv-01869-IM (D. Ore.) (trailing case). Feb. 2023. Deposed March 14, 2023. Testified in Federal District Court trial in Portland, June 2013.

CONSULTING, cont.

- Illinois
  - Submitted declaration for Attorney General's Office of the State of Illinois in defense of its law limiting assault weapons and high-capacity magazines in Harrel v. Raoul, Case No. 23-cv-141-SPM (S.D. Ill.); Langley v. Kelly, Case No. 23-cv-192-NJR (S.D. Ill.); Barnett v. Raoul, 23-cv-209-RJD (S.D. Ill.); Federal Firearms Licensees of Illinois v. Pritzker, 23-cv-215-NJR (S.D. Ill.); Herrera v. Raoul, 23-cv-532 (N.D. Ill.); and *Kenneally v. Raoul, et al.*, 23-cv-50039 (N.D. Ill.). March, 2023.
- California
  - Submitted declaration for Attorney General's Office of the State of California in defense of its law limiting high-capacity magazines in William Wiese, et al., v. Rob Bonta, et al., 2:17-cv-00903-WBA-KJN (E.D. Cal.), May 2023.
- Washington (state)
  - Submitted declaration for Attorney General's Office of the State of Washington in defense of its law limiting high-capacity magazines in Gabriella Sullivan, et al., v. Bob Ferguson, et al., (W.D. Wash.), 3:22-cv-05403, May 2023.
- Colorado
  - Submitted expert report for the Town of Superior, Cities of Superior and Boulder, and Board of County Commissioners of Boulder County in defense of their laws limiting certain firearms and high-capacity magazines in Rocky Mountain Gun Owners et al., v. the Town of Superior et al., (D. Colo.), 22-cv-2680, May 2023.

TEACHING

Classes Offered at UC Berkeley

- HIST 7a: Lower-division lecture – *North America through Reconstruction,* 2011, 2012, 2015, 2018, 2020, 2021 (always in fall)
- HIST 100: Upper-Division Lecture - *American Encounters,* Fall 2009
- HIST 101: Undergraduate Research Seminar - *Senior Thesis Seminar* Spring 2010; Spring 2012, Spring 2013, Fall 2014, Spring 2022, Spring 2023
- HIST 103: Undergraduate Reading Seminars:
  - *Borderlands in North America*, Fall 2009
  - *The U.S. and Latin America in the 19th C.*, Spring 2012
  - *The Border* (reading seminar), Fall 2016
- HIST 104: Undergrad lecture/seminar- *The Craft of History*, Spring 2015, Spring 2017
- HIST 135B: Upper-division lecture - *Encounter and Conquest in Indigenous America*, Spring 2019, Spring 2022, Spring 2023
- HIST 280: Graduate Reading Seminars:
  - *Borderlands in World History,* Fall 2011
  - *The Making of the Modern World, through the Age of Revolutions* (Sem.), Fall 2014 (co-taught with Daniel Sargent)
  - *The Making of the Modern World, since the Age of Revolutions* (Sem.) Spring 2015 (co-taught with Daniel Sargent)
  - *Borderlands in North America* (reading seminar), Spring 2015

Classes Offered at UC Berkeley, cont.

- *Native North American History* (reading seminar), Spring 2021
- HIST 285: Graduate Research Seminars:
  - *American History before 1900*, Spring 2013, Fall 2015
  - *Topics in American History*, Fall 2018
- HIST 375: Graduate Sem: *Teaching History at the University* (pedagogy), Spring 2021

Classes Offered at the University of Colorado

- HIST 1015*:* Lower-Division lecture - *U.S. History to 1865*, Fall 07', Fall 08'
- HIST 1035*:* Lower-Division lecture - *Honors: United States History to 1865*, Fall 04'
- HIST 2015*:* Lower-Division lecture - *Early America,* Fall 06'
- HIST 3050: Undergraduate seminar - *The Arms Trade in World History,* Spring 09'
- HIST 3317*:* UG sem. - *Interethnic Borderlands in the American West*, Fall 04', Fall 07
- HIST 4115: Upper-Div. lec – *Natives & Newcomers in the Americas,* Fall 06', Spring 08'
- HIST 4327*:* Upper-Division lecture - *Novelty, Conflict, and Adaptation in the American Southwest,* Spring 05', Spring 08'
- HIST 4617*:* Upper-Division lecture - *Native North American History: Origins to 1815*, Spring 05', Spring 07', Spring 09'
- HIST 5106: Graduate Reading seminar - *Colloquium: U.S. History to 1865,* Fall 08'
- HIST 6030: Grad. Reading sem - *Frontiers and Borderlands in the Americas*, Spring 07'

PhD Students (1) = advisor/co-advisor; (2) 2nd reader

- **Current Students:**
  - Sophie FitzMaurice (1)
    - Dissertation: "The Material Telegraph: Technology, Environment, and Empire in North America, 1846-1920."
  - J.T. Jamieson (2)
    - Dissertation: "'A Mere Change of Location': Emigration and American Culture, 1800-1860."
  - Russ Weber
    - Dissertation: Emotions and the political history of the early republic.
  - Kyle Jackson (1)
    - Dissertation: New Orleans and Pan-Americanism before WWI
  - Noah Ramage (1)
    - Dissertation: The Cherokee Nation in the late 19th Century
  - Annabel LaBrecque (1)
    - "Deep Histories of Salt in North America"
  - Julia Frankenbach (1)
    - Indigenous labor in the Bay Area during the Mission Era
- **Former PhD Students:**
  - Ariel Ron (2), Glenn M. Linden Associate Professor of the U.S. Civil War Era, Southern Methodist University
    - Dissertation: "Developing the Country: 'Scientific Agriculture' and the Roots of the Republican Party" (2012)

Former PhD students, cont.

- Mattie Harper, Grantmaking Officer, Bush Foundation
  - Dissertation (Ethnic Studies): "French Africans in Ojibwe Country: Negotiating Marriage, Identity, and Race, 1780-1890" (2012)
- Melisa Galván (2), Associate Professor, California State University, Northridge
  - Dissertation: "From Contraband Capital to Border City: Matamoros, 1746-1848," (2013)
- Allie McLafferty, History Instructor, St. Stephens Episcopal School, Austin, TX
  - Dissertation: "'A Plumb Craving for the Other Color': White Men, Non-White Women, and the Sexual Crisis in Antebellum America," (2013)
- Jennifer Carlson, Associate Professor of Sociology and Government & Public Policy, University of Arizona
  - Dissertation (Sociology): "Clinging to their Guns?: The New Politics of Gun Carry in Everyday Life," 2013
- Delia Hagen (1), Founder & Director of Hagen Historical Consulting, Missoula, Montana
  - Dissertation: "Northern Plains Borders and the People In Between, 1860-1940" 2015
- Bathsheba Demuth (2), Dean's Associate Professor of History and Environment & Society, Brown University
  - Dissertation: "The Power of Place: Ideology and Ecology in the Bering Strait, 1848-1988" (2016)
- Alberto Garcia (2), Assistant Professor, San José State University
  - Dissertation: "The Politics of Bracero Migration" (2016)
- Robert Lee (2), University Lecturer, Cambridge University
  - Dissertation: "Louisiana Purchases: The U.S.-Indian Treaty System in the Missouri River Valley" (2017)
- Erica Lee (1), Management and Program Analyst at FDIC, Washington, D.C.
  - Dissertation: "Sanctuaries into Fortresses: Refugees and the Limits of Obligation in Progressive-Era America" (2017)
- Javier Cikota (2), Assistant Professor, Bowdoin College
  - Dissertation: "Frontier Justice: State, Law, and Society in Patagonia, 1880-1940" (2017)
- David Tamayo (2), Assistant Professor, University of Michigan
  - Dissertation: "Serving the Nation: Rotary and Lions Clubs, the Mexican Middle Classes, and the Post-Revolutionary State, 1920s-1960s" (2018)
- Julia Lewandowski (1), Assistant Professor, California State University, San Marcos
  - Dissertation: "Small Victories: Indigenous Proprietors Across Empires in North America" (2019)
- Franklin Sammons (1), Assistant Professor, Washington & Lee
  - Dissertation: "Yazoo's Settlement: Finance, Law, and Dispossession in the Southeastern Borderlands, 1789-1820"

SERVICE

University of California, Berkeley History Department

- Search Committees:
  - Native North American History Search Committee, 2021-22'
  - US West Search Committee, 2018-19'
  - 20th Century Latin America Search Committee, 2014-15'
  - U.S. History Search Committee (Chair), 2012-13'

University of California, Berkeley History Department Service, Cont.

  - Latin America Search Committee, 2011-12'
- Endowed Chairs Committee, 2021-22'
- AC-5 Grad Admissions Committee, 2020-21', 2022-23'
- Governance Task Force Committee, 2014-15'
- Committee on the History Undergraduate Major,
  - 2011-12' (chair, spring 2012); 2015-16'; 2016-17' (chair)
- Honors Committee, 2009-10'
- Admissions Committee, US Field, 2009-10'
- Reentry and Disabled Student Advisor, 2009-10'
- Faculty co-sponsor, with Daniel Sargent, of the Berkeley International and Global History Conference (BIG-H), 2011-2017
- Co-founder (with Daniel Sargent) and co-organizer (since 2021 with Rebecca Herman) of the Berkeley Global History Seminar, 2010-Present.

University of California, Berkeley, Campus Service

- Senate Liaison for external review of UC Berkeley Department of Ethnic Studies, 2021
- Letters & Sciences Executive Committee, 2020-2023
  - L&S Executive Committee Liaison for the external review of UC Berkeley Department of Slavic Languages & Literatures, 2022
- Berkeley Institute for International Studies (IIS)
  - IIS Directorship Search Committee, 2021
  - IIS Faculty Board, 2020-present
  - IIS Simpson Award Committee, 2012; 2013; 2015 (chair); 2016-2019.
- Bancroft Library
  - Friends of the Bancroft Library Council, 2021-present
  - Bancroft Library Prize Committee, 2015, 2016, 2017, 2019, 2020
- Academic Senate Committee on Committees, 2015 – 2017
- American Cultures Senate Subcommittee, 2011-12'

University of Colorado History Department

- Departmental Undergraduate Studies Committee, 2007-08'
- Departmental Executive Committee, 2006-07'
- Robert G. Athearn Lecture organizer, 2006
- Judge for Colorado History Day, Spring 2005
- History Department Graduate Studies Committee, 2004-05', 2008-09'

SERVICE, cont.

- Phi Alpha Theta/History Club Advisor, Fall 2004

Professional Service, Memberships, K-12 and Public Outreach

- Professional Service:
  - Series Editor with Steven Hahn and Amy Dru Stanley for University of Pennsylvania Press book series, "America in the Nineteenth Century", 2014-present. Within the series, I have had served as faculty editor for the following books, working closely with their authors throughout the process:
    - William Kiser, *Borderlands of Slavery: The Struggle Over Captivity and Peonage in the American Southwest* (2017)
    - Noelani Arista, *The Kingdom and the Republic: Sovereign Hawai'i and the Early United States* (2019)
    - Katherine Bjork, *Prairie Imperialists: The Indian Country Origins of American Empire* (2019)
    - Alaina Roberts, *I've been Here All the While: Black Freedom on Native Land* (2021)
    - Paul Conrad, *The Apache Diaspora: Four Centuries of Displacement and Survival* (2021)
    - William Kiser, *Illusions of Empire: The Civil War and Reconstruction in the U.S.-Mexico Borderlands* (2021)
    - William Kiser, *Illusions of Empire: The Civil War and Reconstruction in the U.S.-Mexican Borderlands* (2021)
    - Sarah Keyes, *American Burial Ground: A New History of the Overland Trail* (2023)
  - Editorial Board Service:
    - *Reviews in American History*, 2019-2022
    - *Journal of the Early Republic*, 2020-2022
    - *Journal of the Civil War Era*, 2016-2018
    - *Pacific Historical Review*, 2012-2015
    - *Ethnohistory*, 2009-2012
  - Prize Committees:
    - Robert M. Utley Award Com., Western History Association, 2022-2025
    - Ray Allen Billington Prize Committee, Organization of American Historians, 2017-2019.
    - David J. Weber-Clements Center Prize Committee, Western History Association, 2016-2018.
    - Bernath Lecture Prize Committee, Society for Historians of American Foreign Relations, 2015-2018.
    - Louis Knott Koontz Memorial Award committee, Pacific Coast Branch of the American Historical Association, 2012-15
    - CLAH Article Prize Committee (Chair), Conference on Latin American History, 2012
    - John Ewers Book Prize Committee, Western History Association, 2012

- **Prize Committees, cont.**
  - Sons of the Republic of Texas, Summerfield G. Roberts Book Award Committee, 2010-2012
  - Western History Association's Huntington-WHA Ridge Prize Committee, 2009-2011.
- Conference Committees:
  - Conference Planning Committee, Society for Historians of the Early American Republic, 2021
  - Society for Historians of American Foreign Relations, Conference Planning Committee, 2012 and 2013
  - Organization of American Historians, Conference Planning Com., 2012
  - Society for Historians of the Early Republic, Conference Planning Committee, 2012
  - Local Arrangements Committee, Western History Association Annual Conference, Denver, 2009
  - American Society for Ethnohistory, Conference Planning Com., 2005
- Manuscript Reviewer for *American Historical Review*, *Ethnohistory, Western Historical Quarterly*, the *Journal of American History*, *Modern American History*, *Law and History Review*, *Economics and Human Biology*, *History: the Journal of the Historical Association*, *Journal of the Early Republic*; *Enterprise & Society*; *William & Mary Quarterly*; *the Southwestern Historical Quarterly*; Oxford University Press, Harvard University Press, Princeton University Press, University of Pennsylvania Press, University of California Press, University of Arizona Press, Basic Books, Yale University Press, University of Colorado Press, University of Kansas Press, Cornell University Press, Palgrave & Macmillan; University of North Carolina Press, Duke University Press, University of Virginia Press, University of Tennessee Press, Texas A&M University Press; University of Nebraska Press, Blackwell Publishing, and Rourke Publishing.
- Other Professional Service:
  - Co-Chair, Taskforce on Conference Conduct and Sexual Harassment, 2019, Society for Historians of American Foreign Relations
  - Nominating Committee, Western History Association, 2019-2021
  - External Reviewer for UC Davis Undergraduate Program Review, 2017
  - Secretary and then Chair, Borderlands & Frontiers Studies Committee, Conference on Latin American History, 2011-2012
  - Grant/Fellowship reviews for: National Science Foundation; Comisión Nacional de Investigación científica y tecnológica (Chile)
  - Evaluations and nominations for the MacArthur Fellowship Program

- Member: American Historical Association; Org. of American Historians; Conference on Latin American History; Society for Historians of American Foreign Relations; Society for Historians of the Early American Republic; Western History Association.
- K-12 and Public Outreach:
  - Academic Advisor, Teaching American History Grant "American Democracy in Word and Deed," Mt. Diablo School District, CA, 2009-2013.

Professional Service and Public Outreach, cont.

- Presenter at Teaching American History Grant workshops in Oakland, CA, Dec. 2009, May 2010, and Oct. 2010.
- Lead Presenter at Teaching American History or Gilder-Lehrman workshops for primary-school teachers in:
  - Hartford, Delaware, June 2012
  - New Orleans / San Antonio, June 2012
  - Chicago, IL (June 2011)
  - Deer Valley, AZ (Feb., 2010)
  - Crescent City, CA (Jan., 2009 and April, 2010);
  - Eureka, CA (Jan., 2009);
  - Huntsville, Alabama (June 2008 and June 2009)

- Media:
  - Hour-long interview with the History of California Podcast, Oct. 2020
  - On-air interview for BBC News World Service on gun law following the massacres in Gilroy, El Paso, and Dayton, August 10, 2019
  - On-air interview for extended program "The American Gun Industry: A Billion Dollar Business," Australian Broadcasting Corp., March, 2018
  - On-air interview for BBC Newsday on Remington's bankruptcy, March 27, 2018
  - On-air interview for "City Visions," KALW San Francisco, on youth protests against gun violence, March 26, 2018
  - On-air interview, BBC Radio 5 on America's gun business, Feb. 26, 2018
  - On-air interview for "The Attitude," Pacifica Network, on America's gun business, February 20, 2018
  - "Gotham's Gun Baron," Spoken essay for BBC Radio Three program *The Essay*, January 2017
  - On-screen consultant for German documentary on the U.S. presidency, "Die US-Präsidenten und der Krieg," produced by Westdeutscher Rundfunk and aired nationally in Germany in November 2016.
  - "Guns, Capitalism, and Revolution in the Americas," 2015 SHAFR keynote address filmed and broadcast on CSPAN's American History TV, (first aired August 1, 2015).
  - Interview with Deborah Lawrence and Jon Lawrence for Contesting the Borderlands: Interviews on the Early Southwest (University of Oklahoma Press, 2016), 182-200.
  - Guest of NPR's Backstory, with the American History Guys, January 17, 2014
  - Invited essay for the *New York Times*' Room for Debate feature, July 2, 2013
  - Guest on NPR's "On Point with Tom Ashbrook," Nov. 7, 2012.
  - Guest on PRI's "The World," April 12, 2011
  - On-screen consultant for "The Mexican-American War," Oct. 29, 2006, History Channel
  - KERA "Think" radio interview on *War of a Thousand Deserts*, 2008.

EXHIBIT B

To the CURIOUS.

AN AIR GUN, made by a young man, a native of Rhode-Island, but now resident in this city, and which has been purchased by the subscriber, at a very considerable price, with a view eventually to make it the property of the American Museum but wishes to reimburse himself in the following manner, viz.

He will exhibit it to the examination of all persons desirous of viewing it, and of discharging a shot, for which they shall pay six-pence.

This gun, when properly filled with air, will do execution twenty times, without renewing the charge, and for several times will send a ball thro' an inch board, at the distance of sixty yards, to be seen at the subscribers, No. 13. Maiden-lane, every day in the week, from ten to twelve o'clock in the forenoon, and from three to five in the afternoon, Tuesday and Friday afternoons excepted, at which time it may be seen at the Museum.

GARDINER BAKER,

February 11, 1794. *Keeper of the Museum.*

EXHIBIT C

MUSEUM.

JOSEPH STEWARD, respectfully informs the public that he still continues to make additions to his collection in the State House in Hartford. Among which are several entertaining paintings. One large historic painting containing fourteen figures.

Among the natural curiosities is the skin of a large snake, from South America, 16 feet in length.

A curious savage Priest's cloak, wrought with wampum and bells after their manner.

An air-gun, shot with great force by air instead of powder.

The attention of gentlemen sailing to foreign parts, is requested, to collect curiosities, and every attention of this kind will be gratefully received and suitably rewarded.

Portrait Painting performed by said Steward as usual, at the Museum, and every attention paid to render it agreeable.

Hartford, April 11th, 1803. 94

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

ASSOCIATION OF NEW JERSEY RIFLE & PISTOL CLUBS, INC., et al., Plaintiffs, v. PLATKIN, et al., Defendants.	Civil Action No. 3:18-cv-10507
CHEESEMAN, et al., Plaintiffs, v. PLATKIN, et al., Defendants.	Civil Action No. 1:22-cv-4360
ELLMAN, et al., Plaintiffs, v. PLATKIN, et al., Defendants.	Civil Action No. 3:22-cv-04397

Correction to Rebuttal Expert Report of Brian DeLay

I, Brian DeLay, the undersigned, declare as follows:

1. I have reviewed my declaration dated July 11, 2023, and I have determined that I made a clerical error in that declaration. At paragraphs 6, 66, and 67, I estimated that high capacity firearms constituted approximately 0.002% of firearms in the United States in the period after the ratification of the 14th Amendment. This figure is erroneous. The correct figure is 0.2%.

2. The calculation is based on the figures I set forth in the declaration itself. Specifically, in paragraph 65 I explained that there were approximately 9,294 high-capacity firearms (Henrys and Winchester 1866s) in circulation in the United States in the period leading up to 1872. I further estimated, conservatively, that there were at least 5 million firearms in the United States at that time (paragraph 66). 9,294 divided by 5,000,000 equals 0.0018588; or, rounded, up, 0.002. I erroneously reported this decimal figure as the percentage. Correctly rendered, 0.002 amounts to 0.2%.

I declare that the foregoing is true and correct to the best of my knowledge.

Brian DeLay

Brian DeLay

Dated: September 21, 2023

Exhibit 13

The Peregrine Corporation
Specialists in Defense Dynamics

June 15, 2023

Daniel L. Schmutter, Esq.
Hartman & Winnicki, P.C.
74 Passaic Street
Ridgewood, NJ 07450

Re.: Ellman, et al. v. Platkin, et al., and Association of New Jersey Rifle & Pistol Clubs, Inc. et al. v. Platkin, et al.

Dear Attorney Schmutter:

I am writing to provide my expert report in the two above-referenced cases.

Preparation. In preparation, I have reviewed materials you have provided, including the Complaint for Declaratory and Injunctive Relief in the case of Blake Ellman, et al. v. Matthew Platkin, et al., the Amended Complaint for Declaratory and Injunctive Relief in the case Association of New Jersey Rifle & Pistol Clubs, Inc., et al. v. Matthew Platkin, et al., lists of firearms and firearms features prohibited by New Jersey law, and various materials from my own library which are cited below.

Qualifications for Rendering Opinions. In addition, I am of course also relying on my own education, training and experience, amassed throughout a lifetime of using and working with firearms, both personally and professionally, as described in detail below.

I am an expert, consultant, instructor and expert witness in matters including firearms, ballistics, shooting scene reconstruction, firearms safety, firearms training, police training and tactics, self-defense, and the use of force. I have been retained by the plaintiffs in the two above-referenced cases to provide expert opinion testimony regarding the design, usage, utility, safety features, and lethality of modern semiautomatic rifles, including but not limited to the AR-15

type rifle in its common configurations discussed below, as well as semiautomatic shotguns. I have personal knowledge of the facts stated herein, and if called as a witness, I could competently testify to these facts.

I have been a professional instructor and instructor-trainer (an "instructor-trainer" being one who trains and certifies instructors) in firearms, tactics, self-defense, and use of force, for law enforcement and security officers, police instructors, law enforcement agencies, military personnel, and private (i.e., non-law enforcement) individuals throughout the United States, and occasionally in other countries, over approximately the past 44 years. I estimate that I have trained over 17,000 individuals in these skills and topics.

I have been certified as a firearms instructor by the Federal Bureau of Investigation ("FBI"), National Rifle Association ("NRA"), New Jersey Police Training Commission, Pennsylvania Municipal Police Officers Education & Training Commission, Glock, Heckler & Koch ("HK"), and others. My instructor certifications cover rifles of all sorts, handguns, and shotguns, and cover the training of police, security personnel and civilians in the recreational and defensive use of firearms. I am also certified as a Chief Range Safety Officer, that being someone who is trained to supervise other instructors on a multi-range facility, and to oversee the operations of the facility from a safety standpoint. I was an instructor at the Burlington County (New Jersey) Police Academy from approximately 1986 to 1995, and was an instructor at the Allentown (Pennsylvania) Police Academy from 1999 to 2007. I taught a course I developed entitled "Police Use of Force" in the Criminal Justice Department of Indiana University in Bloomington, Indiana for two years while I lived in Indiana. I instructed in a three-year series of Senior Firearms Instructor Classes for the federal Bureau of Alcohol, Tobacco & Firearms, taught at various locations on the East and West Coasts, including Orlando, Los Angeles, San Francisco, and San Diego. I have regularly been a presenter on firearms-related topics at annual and regional training conferences of the International Association of Law Enforcement Firearms Instructors ("IALEFI"), the International Law Enforcement Educators & Trainers Association ("ILEETA"), and in past years the American Society of Law Enforcement Trainers ("ASLET").

Law enforcement agencies for which I have conducted instructor-level training in firearms include the New York State Police (multiple courses), Oregon State Police, Louisiana State Police, Missouri Highway Patrol, Washington D.C. Metropolitan Police (two courses), the Maryland National Capital Park Police, Massachusetts Metropolitan Police, the Massachusetts Criminal Justice Training Council, the Tennessee Bureau of Investigation, the North Carolina Justice Academy (multiple classes), the Connecticut State Police Academy (multiple classes), Henrico County (VA), Yellowstone County (MT), Billings (MT), the San Francisco Sheriff's Office, El Cajon (CA), Yolo County (CA) Sheriff's Office, Snohomish County (WA) Sheriff's Office, Toronto Metropolitan Police Service (Emergency Task Force and Dignitary Protection Unit), Calgary Police Service Tactical Unit, Salt Lake County Sheriff's Office, Nevada State Fire Marshal's Office, and the Police Departments of Philadelphia, Baltimore, Dallas (two courses), Phoenix (multiple courses), Miami, Jacksonville (two courses), St. Petersburg, Seattle, Tacoma, and many others.

In New Jersey, in addition to my teaching as a staff instructor at the Burlington County Police Academy, I have conducted law enforcement instructor-level training in firearms and/or armorer training, for the police departments of Jersey City, Trenton, Atlantic City (multiple courses), Mt. Laurel, Midland Park, Ramsey, Jefferson Township, the Cape May County Police Academy, the Middlesex County Police Academy, the Essex County Police Academy, the Bergen County Police Academy, the New Jersey Department of Corrections, and the New Jersey Division of Fish & Wildlife Law Enforcement Bureau, among others. I co-instructed a police counter-sniper rifle course at Fort Dix, hosted by the New Jersey State Police, and two Senior Firearms Instructor Courses for the Union County Prosecutor's Office. For all but one of the past 33 years I have conducted Police Firearms Instructor Recertification Courses annually for the Atlantic County Prosecutor's Office, attended by all law enforcement firearms instructors in Atlantic County.

Training I have conducted in New Jersey for non-police includes programs for the New Jersey Armored Motor Carriers Association, programs for three armored car companies and one precious metals company, training for executive protection and estate security personnel, and self-defense firearms classes, including training with handguns, shotguns and rifles, for non-law

enforcement individuals in Ledgewood, Sussex, New Egypt, Berkeley Township, Princeton Junction, and Pleasantville, and several armed security officer training programs conducted in East Brunswick.

I have consulted extensively for years for the Pennsylvania Municipal Police Officers Education & Training Commission ("MPOETC"). Among other things, I served on the curriculum development committee that wrote the firearms and use of force curriculum that was used at police academies throughout the Commonwealth of Pennsylvania for some 18 years. I conducted instructor-training courses for the MPOETC at the Pennsylvania State Police Academy at Hershey, at Fort Indiantown Gap, and at other locations; have served as a subject matter expert that established Patrol Rifle Guidelines ("patrol rifles" being AR-15 type rifles and other semiautomatic rifles) distributed to law enforcement agencies throughout Pennsylvania, and most recently served on the MPOETC committee that created a mandatory in-service Use of Force training program (including teaching the pilot course and an instructor-training course) that was presented to over 24,000 police officers throughout the Commonwealth of Pennsylvania.

I have served for some 35 years on the IALEFI Board of Directors, and for about the past 10 years have been First Vice President of that association. IALEFI publishes authoritative materials and guidelines for law enforcement training, and conducts police firearms and use of force training programs, including a week-long Annual Training Conference attended by hundreds of law enforcement firearms instructors from all parts of the United States and various foreign countries. IALEFI also conducts regional, instructor certification, and master instructor development firearms training programs each year at locations throughout the country, as well as occasional international programs in other countries.

I have served as a sworn, armed reserve deputy sheriff or special deputy sheriff for two sheriff's departments over the past 25 years, have served as a firearms and use of force instructor at both of those departments, and have had first-hand experience in a wide range of law enforcement activities, up to and including the arrest of criminals at gunpoint, and dealing with barricaded gunman situations. I have been qualified with, and have carried and used AR-15 rifles in my service with both of those departments.

Concerning my experience, knowledge, and expertise with semiautomatic rifles in general and AR-15 type rifles in particular, I have owned and used semiautomatic rifles since I was sixteen, that is, for the past 55 years. I have hunted with a semiautomatic rifle since I was sixteen. I have, since the 1970's, owned and used Ruger Mini-14 rifles. The Mini-14 is a semiautomatic, .223 (5.56mm) caliber rifle that is functionally virtually identical to the AR-15 rifle in terms of its ballistics, rate of fire, and other capabilities, although most of the Mini-14's variants have not had some of the AR-15's military-looking features that the New Jersey legislation on "assault weapons" (called "assault firearms" in New Jersey law) finds objectionable, such as the pistol grip and flash suppressor. I currently own several Ruger Mini-14 rifles, and I have personally carried Mini-14 rifles for defensive purposes on three continents. I have owned and used AR-15 rifles since the 1980's. I served as the Line Judge for Colt Firearms at the first Colt Cup rifle competition ever held, which was fired with AR-15 rifles in Connecticut. I have been certified as an AR-15 Armorer by Colt, and as an FN-15 Armorer by FN (Fabrique Nationale). An armorer is an individual trained and certified to inspect, maintain, and repair a certain model or category of firearms by the manufacturer of the firearms. Certification as an armorer means I am fully conversant with the internals parts and workings of the AR-15, its design and function. The FN-15 is an AR-15 clone, manufactured by FN and functionally identical to the Colt AR-15. It is used as a patrol rifle by my sheriff's department. I have written several published articles about the AR-15 and other semiautomatic rifles, and have on at least two occasions worked as a consultant to manufacturers of such rifles. I currently own several AR-15 rifles, as well as M1A rifles, M1 Garand rifles, US M1 Carbines, Mini-14s, semi-automatic variants of the AK-47 rifle, an SKS rifle, a Ruger 10/22, an AR-7 survival rifle, and other semiautomatic rifles that the New Jersey legislation in question might categorize as "assault weapons." I have also owned and used other semiautomatic rifles, including the Steyr AUG, the FN-FAL, several semiautomatic .22 rimfire rifles, an H&K 91, and several IWI Tavor rifles. I assisted IWI in the development of its Police Armorer Course for the Tavor rifle, and in preparation of its Armorer Manual. I have also at times worked as a consultant to Sturm, Ruger & Co., Steyr, and Lancer Systems, all of which are manufacturers of semiautomatic rifles and of what the New Jersey legislation would call "assault firearms" and "large capacity ammunition magazines."

I have taught police user-level and instructor level courses in what police call "patrol rifle" (i.e., AR-15 type rifle) in 1999, 2003, 2004, 2009, 2010, 2012, 2017 and 2018, have taught a "Shoulder Weapon Selection" course at the Connecticut State Police Academy in 1994, Counter-sniper Rifle Courses at Ft. Dix (NJ) and at the Glastonbury Police Department in Connecticut, Special Weapons and SWAT Team courses addressing the AR-15 rifle at the Atlantic County (NJ) and Cape May County (NJ) Police Academies, assisted in conducting AR-15 rifle training and qualification sessions for my sheriff's departments in Indiana and Pennsylvania, and for the Berks-Lehigh Regional Police in Pennsylvania, and was a presenter on the Patrol Rifle Panel at the ILEETA Annual Conference in St. Louis in 2017.

I achieved competitive rankings as a Junior Smallbore Rifle Expert and Light Rifle Expert in my teenage years, and have thereafter been certified as a High Power Rifle Expert, Patrol Rifle Expert, Patrol Rifle Instructor, and Police Precision Rifle Instructor. I successfully graduated from the NRA's Police Rifle Instructor Development Course taught at USMC Base Quantico, Virginia, from the NRA's Precision Rifle Instructor School held at The Crucible in Fredericksburg, Virginia, from the IACP's Counter-Sniper Rifle Course at Fort Dix, New Jersey, from Gunsite's General Rifle Course (using an MIA semiautomatic rifle) with an Expert rating, from the Thunder Ranch "Urban Rifle" course (using and AR-15 rifle and a Steyr AUG semiautomatic rifle), and from the U.S. Army Marksmanship Training Unit's Counter-Sniper Rifle Course at Fort Benning, Georgia. With handgun, I have held the rating of Distinguished Expert, which is a higher rating than expert, and I was an "A" Class IPSC Combat Pistol Shooter and qualified for the Indiana "Governor's Twenty."

I began to shoot shotguns in my early teenage years, and I have hunted with shotguns for the past 55 years in locations including Connecticut, New York, New Jersey, Pennsylvania, South Carolina and Louisiana. I have participated, and sometimes competed, in the clay pigeon sports of skeet, trap and sporting clays, and have fired shotguns in Three Gun Competition and Combat Shotgun events. I am certified to teach shotgun both to law enforcement and to "civilians" (i.e., non-law enforcement). I have placed on a winning team with shotgun in a national event. My firearms inventory contains several dozen shotguns, including semiautomatic shotguns that, because of their specific features, would be prohibited by the New Jersey "assault

weapon" statute. I own or have owned shotguns of all other common types, including break-open (hinge action) single-barrel and double-barrel shotguns, pump-action shotguns, and bolt-action shotguns in all gauges from 10-gauge through .410. I have taught shotgun to law enforcement and to "civilians" in Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Indiana, Virginia, Florida, Utah, Washington D.C., Canada, and Africa. I helped to develop and teach a Police Shotgun Armorer's Program for O. F. Mossberg & Sons, the world's largest manufacturer of shotguns. I am certified as a shotgun armorer not only by Mossberg, but by Benelli for its semiautomatic shotguns.

In addition to the AR-15s and other semiautomatic rifles mentioned above, I have owned and used bolt-action rifles, lever-action rifles, break-open single shot ("hinge action") rifles and combination guns, pump-action rifles, and black powder muzzle-loading rifles. In addition, I have owned and used select-fire M16 rifles (which are true "machine guns" capable of fully automatic fire), as well as select-fire submachine guns of various brands and types, also capable of fully automatic fire. I have also fired other fully-automatic firearms, including military belt-fed machine guns and automatic weapons fed from large box magazines. I have received armorer training, and have worked as an expert witness, in two cases involving the GAU-17 and other motor-driven, fully automatic "mini-guns," typically mounted on helicopter gunships, military patrol boats, and other military vehicles, capable of cyclic rates of fire ranging from 2,000 to 4,000 rounds per minute. I am thus conversant with all types of rifles, their designs and functioning characteristics, their capabilities, ballistics, and features, and have actual, first-hand knowledge of the differences between true military weapons and the semi-automatic rifles, shotguns and handguns addressed by the New Jersey legislation. I have also written over 30 published articles about handguns, handgun ammunition, and handgun technique, and at least seven published articles on shotguns (including semiautomatic shotguns), shotgun ammunition, and shotgun technique. I have served as a consultant on design features to major manufacturers of rifles, shotguns and handguns.

I have been a regular presenter at state, regional, national and international conferences of law enforcement instructors, including but not limited to ASLET, IALEFI, and ILEETA. I taught classes at last year's IALEFI Annual Training Conference in Melbourne, Florida and at an

ILEETA Conference in St. Louis, Missouri, where I was a panelist on both the ILEETA Deadly Force Panel of Experts and the ILEETA Active Shooter Panel of Experts. I have previously been a presenter at ILEETA Annual Conferences in St. Louis, and before that when they were held in the Chicago area. I have been a panelist on several other expert panels at these instructor training conferences.

I have authored over 125 published articles in the firearms and tactics field. I was Technical Editor of The Police Marksman magazine, where I performed technical reviews and evaluations of firearms, ammunition, and firearms accessories of all sorts. I am the principal author of Firearms Training Standards for Law Enforcement Personnel, the Associate Editor of Standards & Practices Guide for Law Enforcement Firearms Instructors, and the principal author of the IALEFI Guidelines for Simulation Training Safety, originally published in 2004 with a recently-published revision in 2023.

In total, I have trained what I estimate to be some 17,000 students in my classes. I have watched them fire literally millions of rounds of ammunition from rifles (mainly AR-15s and other semiautomatic rifles), handguns of all sorts, shotguns, submachine guns, and machine guns. I have watched others fire many millions more rounds from such firearms in training classes, qualification exercises, competitions, and firearms demonstrations. I myself have fired hundreds of thousands of rounds of ammunition from such weapons. I have owned and/or used firearms, including select-fire and fully automatic firearms, with suppressors ("silencers"), flash suppressors, detachable box magazines, drum magazines, pistol-grip stocks, folding stocks, telescoping stocks, barrel shrouds, and other features addressed by the legislation in question. I will next be involved in police AR-15 training and qualification within the next few weeks for my sheriff's department here in Pennsylvania. I have actual – not just theoretical or academic – hands-on experience with all of the types of firearms and firearms design features addressed by the legislation in question in these lawsuits.

I have over the past 55-plus years visited at least many hundreds, if not thousands, of stores and shops where firearms, ammunition, and firearms accessories are sold, gunsmithing shops, firearms factories, firearms industry trade shows, and gun shows where firearms and

firearms accessories are bought and sold. The stores range from small local gun shops in all parts of the United States where I have traveled to large national chains like Cabela's, Bass Pro, Academy, Gander Mountain, Sportsman's Warehouse, and Walmart. The shows range from local gun shows to the annual SHOT Show in Las Vegas, hosting over 2,400 exhibitors from all over the world and attended by over 60,000 people. I am thus very familiar with the firearms and firearms accessories, including such things as folding and telescoping stocks, flash suppressors, and magazines, that exist on the market and that are used by legitimate purchasers throughout the country.

I have served as an expert witness in numerous courts since 1984. In total, I have served as an expert in over 400 cases, and have testified roughly 100 times in criminal and civil trials in state and federal trial courts throughout the United States, in addition to testimony before grand juries, police boards, administrative courts and tribunals (including the U.S. Government Accountability Office or "GAO"), state and city legislative committees, and before committees of both Houses of the United States Congress on firearms issues. In total, I have been qualified and have testified as an expert in some 15 federal courts in 13 states, and in some 45 state courts in 22 states. I have testified as an expert in U.S. District Courts in Pennsylvania (all three districts), Connecticut, New York, New Jersey, California, Maryland, Tennessee, Louisiana, Arkansas, Florida, Montana, Illinois, and Oregon. In 2020-2021, I testified as a firearms expert before the U.S. District Court for the Southern District of California in Miller v. Becerra, a case concerning California's "assault weapons" law that involved many issues similar to those in this case. I have also served as an expert in many cases that have been dismissed, settled, plea bargained, or for some other reason have not gone to trial or have not required my trial testimony, in at least 23 other states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Canada.

In New Jersey, I have testified as a firearms expert in the U.S. District Court, in Superior Courts in Essex, Union, Camden, Burlington, Atlantic, and Cape May counties, in Camden City Municipal Court, before several grand juries, and in hearings before the New Jersey Office of Administrative Law. These matters have included civil cases, and criminal cases in which I have testified sometimes as a defense expert witness, and other times as a prosecution expert witness.

Throughout the country, I have served as an expert in several cases involving AR-15s and other semiautomatic rifles, as well as in many cases involving shotguns.

Further details of my training, experience and qualifications are contained in my curriculum vitae, attached as **Exhibit 1** hereto.

OPINIONS AND ANALYSIS

Semiautomatic Firearms: Function and History. A semiautomatic firearm uses the power of the firing cartridge, typically either through diverting some of the pressurized gas from the cartridge's burning propellant gunpowder, or through the rearward recoil produced when the projectile moves forward out of the cartridge case, to operate the gun's mechanism, extracting and ejecting the fired cartridge case and bringing a fresh cartridge into position for firing. In a semiautomatic firearm, the trigger must be pulled separately for each shot. A semiautomatic firearm differs from a manually operated repeating firearm, such as a bolt-action, lever-action, or pump-action firearm, in which the user manually operates the mechanism to bring a fresh cartridge into position for firing. The semiautomatic also differs from a fully automatic ("automatic") firearm – such as a "machine gun" -- in which holding the trigger depressed will result in a continuous, rapid series of shots until the trigger is released or the ammunition supply is exhausted. Semiautomatic firearms are not a new invention. Semiautomatic rifles, shotguns, and handguns were all developed before 1900, and were in common use in the early 1900's. Our military first adopted a semiautomatic pistol (the Colt .45 caliber Model 1911) in the year 1911.

Armalite, an American small arms engineering firm located in California, developed the AR-15 in the 1950's. It was designed in large part by Eugene ("Gene") Stoner, a famous American firearms designer whom I met and spoke with several times. In 1959, due to financial and production problems, Armalite sold its rights to its AR-10 and AR-15 designs to Colt's Manufacturing. The model designation "AR-15" stands for "Armalite Rifle, Model 15," not for "assault rifle" as some uninformed individuals maintain. A version of the rifle, in "select-fire"

form (meaning it could, by operation of a selector switch, be fired either semiautomatically, i.e., one shot for each pull of the trigger, or fully-automatically, i.e., continuous firing as long as the trigger was held depressed), was first used by our military in the Vietnam War as the M-16. AR-15 type rifles, also called "MSRs" or "Modern Sporting Rifles," are today among the most popular rifles sold and used in the United States. They have been manufactured by literally hundreds of companies, including Colt, FN, Ruger, Remington, Bushmaster, Rock River Arms, Wilson Combat, Barrett, DPMS Panther Arms, H&K, Lewis Machine, Olympic Arms, Palmetto State Armory, and Mossberg. The National Shooting Sports Foundation (NSSF), a firearms industry trade group, estimated about five years ago that there were, at that time, between 5 and 10 million AR-15 rifles in civilian hands in the United States. In recent years popularity and sales of the AR-15 have increased greatly, and it has now become one of the most popular rifles and widely-used rifles in the country. AR-15s are made or assembled and sold by many manufacturers, ranging in size from one-man shops to large companies such as Colt, Ruger, Remington, Mossberg, SigArms, Rock River Arms, and others. Current estimates of AR-15 and AK-type semiautomatic firearms in civilian hands in the United States are in the range of 25 million or more. The "AK" stands for Automat Kalashnikova, or Kalashnikov Automatic Rifle. First produced as a Soviet military rifle in 1947 (thus "AK-47"), the AK was the invention of Russian firearms designer Mikhail Kalashnikov. The AK became one of the most widely-used rifles in the world, with semiautomatic versions being sold in the United States and other countries for civilian use. While made in a number of calibers, the most commonly seen caliber for the AK rifles is 7.62 x 39mm, a larger caliber than is used in the standard AR-15 rifle, which fires the .223 Remington or 5.56mm NATO cartridge.

For the sake of clarity, I must emphasize that while I have discussed the military "select fire" M16 rifle above, as well as the semiautomatic-only civilian AR-15 rifle, the challenged version of the New Jersey "assault firearms" law has nothing to do with the military M16 select-fire rifle, only with the AR-15, the civilian semiautomatic version that fires one single shot for each separate pull of the trigger, just as all other semiautomatic firearms do. The select-fire ("fully automatic") M16 version of the rifle is heavily regulated under federal law and other New Jersey statutes, and is not involved in this case.

Semiautomatic Rifle and Pistol Magazines. The AR-15 uses a detachable box magazine for the .223 Remington or 5.56mm NATO cartridge. These two rounds are very similar, and can be used interchangeably in many AR-15s. The most common magazine size for the AR-15, and the size of the great majority of magazines manufactured and sold for the AR-15, is 30 rounds. The next most commonly seen magazine size is 20 rounds. Magazines of 5, 10 and 40 rounds are also available, as well as other sizes, but are relatively rare. Over the past decades I have personally seen tens of thousands of 30-round AR-15 magazines, perhaps a thousand 20-round AR-15 magazines, and fewer than 100 AR-15 magazines of all other sizes combined. The New Jersey law is incorrect and misleading when it describes 20-round and 30-round AR-15 magazines as "large capacity ammunition magazines." They are, to the contrary, the standard-sized magazines for the AR-15.

The AK-type firearms also use detachable box magazines. Far and away the most commonly seen and commonly available magazine for the AK firearms holds 30 rounds, although both smaller capacity and larger capacity magazines are available. The most widely-available and commonly seen magazines for other semiautomatic rifles, including the Ruger Mini-14, Steyr AUG, M1A, Galil and others are 20 to 30 rounds. Standard-size magazines for the M1 Carbine are 15 and 30 rounds.

With an estimated 25 million AR-15 and AK-type firearms in civilian hands in the United States, there are certainly many times that number of 20-round and 30-round magazines in private ownership as well. In my opinion, estimates that there are currently 100 million or more 30-round AR-15 magazines in circulation and quite credible. Magazines are relatively inexpensive, with either metal or plastic 30-round AR-15 magazines commonly selling for $10 to $15 each, whereas the rifles in which the magazines are used may cost $600 to $1,000 or more. It is not unusual to see literally several thousand 30-round AR-15 and AK magazines for sale at a modest-sized weekend gun show.

The New Jersey law's limit of handgun magazine size to 10 rounds imposes an unreasonable restriction on New Jersey gun owners, especially (but not only) those with concealed carry permits. Many popular semiautomatic pistols have greater magazine capacities.

Examples include the Glock 17 (17 rounds), the SIG P320 (17 rounds), and the Smith & Wesson M&P9 2.0 (17 rounds). Even the compact versions of these pistols – specifically, the Glock 19, the SIG P320 Compact, and the S&W M&P9 Compact, all have magazine capacities of 15 rounds. Some of the most popular "micro-9" pistols have magazine capacities that exceed the New Jersey limit, such as the Springfield Hellcat (11-round and 13-round magazines), the S&W Shield Plus (10-round and 13-round magazines), and the SIG P365 (10, 12, 15 and 17-round magazines). For many individuals carrying a concealed handgun for self-protection, carrying an extra magazine to compensate for the New Jersey law's magazine size limit imposes and uncomfortable, and in some cases impossible, burden. Most police nationwide, including in New Jersey, carry handguns that hold 16-18 rounds, plus between one and three additional loaded magazines on their persons. If police officers need that many rounds to protect themselves and the public, why should gun owners in New Jersey be limited to fewer rounds to protect themselves and their loved ones?

Use and Advantages of the AR-15 Rifle. AR-15 rifles are commonly used for both formal and informal target shooting (including each year at the National Matches at Camp Perry, Ohio), for hunting, by farmers and ranchers for control of predators and pest animals, and for self-defense. They are also widely used by law enforcement agencies as "patrol rifles," in many parts of the country all but completely replacing the 12-gauge shotgun as the shoulder weapon carried in most police cars. Anyone visiting a retail gun store in most states will likely see many AR-15 rifles for sale, as well as displays of magazines, accessories, and ammunition for these rifles. Similarly, someone taking a trip to most outdoor shooting ranges, and indoor ranges with rifle capability as well, will find many people target shooting with AR-15 rifles.

The AR-15 is especially popular because of its light weight, very mild recoil, and good ergonomics, all of which make it well suited to younger shooters, female shooters, and other shooters of smaller stature, as well as an easy rifle for larger, stronger individuals to use. All of these design features of the AR-15 – its light weight, mild recoil, and good ergonomics – as well as the adjustable length of its buttstock when fitted with a telescoping buttstock (as it commonly is), the effectiveness of its cartridge for self-defense use, and its better continuity of fire when used with its most commonly available 20-round and 30-round magazines, make the AR-15, in

many cases, a much better choice of shoulder weapon for self-defense by a female user or other smaller-statured user than the 12-gauge or other shotguns that have often been recommended for that purpose in the past. The shotgun, in fact, is much harder for most women (as well as most other shooters) to use, too heavy, ill-fitting in its commonly available stock configurations, and has recoil which is far too punishing, discouraging practice and resulting in poor competence and many safety problems. For the same reasons that the AR-15 has largely replaced the shotgun in police use, it is a better choice as a self-defense weapon for many private individuals as well. Other semiautomatic rifles which would be prohibited by the New Jersey legislation are similarly good choices as self-defense shoulder weapons for women and men alike.

A major disadvantage of the shotguns often recommended for defense in the home is the shotgun's considerable recoil. Used with the type of shotgun usually recommended for defensive use, the typical 12-gauge shotgun often has 25 foot pounds or more of free recoil when fired, which makes firing more than a few shots unpleasant or painful for many shooters. Even in police training programs, this much recoil becomes problematic, limiting the amount of shooting that can be done, and the familiarity and skill level with the shotgun that can be achieved. Also, the spreading pattern of shotgun pellets, whether birdshot or buckshot, creates a danger due to the possibility of pellets missing the intended target, even with a properly-aimed shot. In contrast, the AR-15 and similar semi-automatic rifles have little perceptible recoil, and are therefore much more pleasant to shoot. More shots can therefore be fired in training, and better familiarity with the firearm and accurate results can thus be more easily obtained. In many thousands of law enforcement agencies nationwide, the switch from shotguns to AR-15s and similar semiautomatic rifles as shoulder weapons has resulted in officers handling the guns with greater confidence and competence, and firing with accuracy, even at distances of 50 yards and more, far exceeding the accuracy most officers were ever able to achieve with shotguns. This results not only in greater effectiveness when the rifle must be used for self-defense, but greater safety as well, not only for the user but for any others who may be in the area. The same effectiveness and safety should be available to non-police officers as to police officers.

Use of the AR-15 and Similar Rifles for Self-Defense. My opinion that AR-15s and similar semiautomatic rifles are suitable for self-defense use by private individuals is supported

by many examples of such use. For example, a pregnant mother used an AR-15 to save the life of her husband, killing one of the two intruders who were terrorizing her family. Attached hereto as **Exhibit 2** is a true and correct copy of the digital article "Pregnant Florida Mom Uses AR-15 to Kill Home Intruder.

Another example was in Glen St. Mary, Florida in 2018, where seven home invaders were fought off by their would-be victim using an AR-15. One of the seven invaders was killed, and five others were arrested. The defender fired over thirty (30) shots in the process, underscoring the need for magazines that hold more than a few rounds of ammunition. Attached hereto as **Exhibit 3** is a true and correct copy of the digital article, "Deputies: 30 Rounds Fired From AR-15 in Deadly Florida Home Invasion."

In another case, in Oswego, Illinois, a man named Dave Thomas, who was in legal possession of an AR-15, used it without the need to fire a single shot to stop a man who was repeatedly stabbing one of his neighbors. Attached hereto as **Exhibit 4** is a true and correct copy of the digital article "Man Armed With AR-15 Stops Attack By Neighbor in Oswego."

In the highly-publicized 2017 active shooter event at the First Baptist Church in Sutherland Springs, Texas, in which the gunman killed 27 people and wounded 20 others, a 55-year-old plumber living across the street from the church, alerted by his daughter that a man was shooting people at the church, got his AR-15 out of his gun safe, loaded it, and exchanged shots with the gunman, hitting him twice, and then flagged down a passing motorist to pursue the gunman together when the gunman attempted to flee from the scene. Attached hereto as **Exhibit 5** is a true and correct copy of the digital article, "Texas Hero Reportedly Used His Own AR to Confront the Sutherland Springs Shooter."

In a case in Harris County, Texas in 2013, a 15-year-old boy, at home with his little sister, used an AR-15 to drive off two burglars who had broken a window to enter the house. They fled, leaving a trail of blood. Attached hereto as **Exhibit 6** is a true and correct copy of the digital article, "Harris County Deputy's Son Shoots One of Two Intruders."

Also in 2013, a man with a .223 AR-15-type rifle in Montgomery County, Pennsylvania, successfully defended himself and his wife against an intruder, who died later in the hospital. Attached hereto as **Exhibit 7** is a true and correct copy of the digital article, "Elkins Park Man Killed After Forcing His Way Into Apartment."

In 2017 in Broken Arrow, Oklahoma, three masked intruders were shot and killed by 23-year-old Zach Peters, the son of the home's owner, using an AR-15 rifle. The shooting was ruled justifiable. Attached hereto as **Exhibit 8** is a true and correct copy of the digital article, "Shooting Deemed Justifiable: Authorities Say Zach Peters Acted Lawfully When He Shot, Killed Three Intruders."

Numerous other cases in which the AR-15 and other semi-automatic rifles have been used in self-defense can be found. The fact that several of the above examples are cases in which a homeowner or other private citizen has had to fight off multiple attackers is significant in explaining the need for semiautomatic firearms and magazines that hold 20-30 rounds of ammunition.

It is incorrect, and in fact a common myth, that the .223/5.56mm projectile fired by the AR-15 and other rifles under consideration is too penetrative to be used safely for self-defense inside and around homes, businesses, farms and ranches. If that were the case, police would not be using AR-15 "patrol rifles" nationwide, including in urban and suburban areas, and as entry weapons for indoor searches and arrests. The fact is that with properly selected ammunition, the .223/5.56mm actually presents less danger of overpenetrating walls, floors, ceilings and criminal attackers than conventional self-defense handgun bullets in calibers such as 9mm, .40 S&W, and .45 Auto. This is because the .223/5.56mm has a much higher muzzle velocity and fires a much smaller, lighter projectile which, if properly selected as to projectile type (e.g., the self-defense type rounds that are widely available where ammunition is sold), will fragment easily and will be unlikely to penetrate as many sheetrock partitions or other common building elements as many common handgun bullets. I have demonstrated this to classes of police and others by firing through sheetrock and other materials, and many published studies confirm the same results. See attached hereto as **Exhibit 9** an article by R.K. Taubert (FBI, Ret.), "About .223 Penetration,"

Exhibit 10 "Real World Testing: .223/5.56 Penetration Tests vs. .40 S&W and 12 ga. Slug," and **Exhibit 11** "Why 'High-Powered' 5.56 NATO/.223 AR-15 is Safer for Home Defense (FBI Overpenetration Testing)," Prepared Gun Owners, July 14, 2016.

Features of the AR-15 and Other So-Called "Assault Weapons." The New Jersey statute, in addition to listing a number of prohibited "assault weapons," identifies several features that supposedly distinguish "assault weapons" – as it defines that term -- from ordinary semiautomatic firearms. In actuality, the term "assault weapon" (unlike "assault rifle," which is a compact, lightweight select-fire rifle firing an intermediate-powered cartridge) is a pejorative term created by legislative draftsmen which has no technical definition in the firearms field. See Standards & Practices Reference Guide for Law Enforcement Firearms Instructors, P. Covey and E. Kapelsohn, 1995, "assault rifle" and "assault weapon," p. 5 ff.

The New Jersey statute categorizes as "substantially identical" to the banned firearms, and thus also banned, semiautomatic rifles that have the ability to accept a detachable magazine, and at least two of the following features:

1. a folding or telescoping stock;
2. a pistol grip that protrudes conspicuously beneath the action of the weapon;
3. a bayonet mount;
4. a flash suppressor, or a threaded barrel designed to accommodate a flash suppressor; or
5. a grenade launcher.

The statute also prohibits a semiautomatic shotgun that has at least two of the following features:

1. a folding or telescoping stock;
2. a pistol grip that protrudes conspicuously beneath the action of the weapon;
3. a fixed magazine capacity in excess of 5 rounds; or
4. an ability to accept a detachable magazine.

Having extensive personal experience as a user, as a firearms instructor, and as a consultant, with all of the design features identified by the legislation, and with their practical effects on the capabilities of firearms, I will address these features below.

Pistol Grips. One of the New Jersey law's prohibited features is a "pistol grip that protrudes conspicuously beneath the action of the weapon." The AR-15 is, as discussed above, a semiautomatic version of the select-fire military M16 and its predecessor, the Armalite Rifle Model 15 ("AR-15"). The M16 is designed, as its "select-fire" description indicates, to fire either semiautomatically, or automatically ("full-auto") by the positioning of its safety/selector lever for one or the other mode of fire. When firing automatically ("full-auto"), the military M16 has a cyclic rate of fire of 750-900 rounds per minute. In practical effect, with the most commonly used 30-round magazines, a shooter firing an M16 full-auto may actually be able to discharge roughly 250-300 rounds per minute, although not necessarily with good accuracy. In order to allow military users of the M16 to fire it full-auto while staying on target, rather than having significant "muzzle climb" while firing, the M16, and similar fully-automatic or select-fire rifles, employ what is termed a "straight-line design," meaning that the rifle's barrel and its stock, which is placed on the user's shoulder when firing, are in a straight line, so that recoil is transmitted straight rearward into the user's shoulder along the axis of the bore, which is the axis of recoil. Attached hereto as **Exhibit 12** is a diagram of a standard AR-15/M16, showing this straight-line design. In order to make the straight-line design possible, the front and rear sight assemblies of the M16 and AR-15 are raised considerably (about 2-1/2 inches) above the line of the rifle's bore (barrel), so that they will be in line with the shooter's eye for aiming, when the rifle's buttstock is seated on the user's shoulder in firing position. This differs from the conventional design of sporting rifles and shotguns (generally wooden-stocked), in which the sights are mounted much closer to the axis of the bore/axis of recoil, and the buttstock angles downward significantly to reach the user's shoulder. Because the buttstock and the point of shoulder support is thus significantly below the axis of recoil, such conventionally-stocked rifles exhibit a great deal of "muzzle rise" when each shot is fired. This slows down even semiautomatic or manually-operated shots from conventionally-stocked rifles, and would make it very hard to keep them on target if they could be made to fire full-auto. The purpose of the M16's straight-line design is to

eliminate this muzzle rise from shot to shot. However, because the M16 and AR-15 have a stock which comes straight back from the rifle's receiver to the user's shoulder, it then becomes necessary to provide a "pistol grip" that protrudes downward from the rifle's receiver ("action," per the New Jersey statute). Otherwise, the user would have to raise his or her dominant arm uncomfortably high to grip the rifle, operate the manual safety, and pull the trigger. In such a position, the dominant hand could interfere with aiming the rifle, in addition to which the trigger and trigger guard of the M16 and AR-15 are not located in a position that would make this contorted arm and hand position easily performable. The design purpose of the M16/AR-15's pistol grip is to position the user's hand properly and comfortably behind the trigger and trigger guard of the rifle – a position which would not be feasible for the user to assume without the pistol grip – and, in the case of the M16 when fired full-auto in military use, to provide better control of the rifle in full-auto fire.

Even when the rifle is fired semiautomatically, in the normal manner for the "civilian" AR-15, the straight-line stock design and the pistol grip reduces muzzle rise, allowing more accurate fire and faster follow-up shots.

Contrary to the claims of some anti-gun activists, a pistol grip on a rifle stock does not allow the rifle to be "wildly spray fired" in all directions. Certainly our Department of Defense would not want our military rifles, including our M16 and later evolved M4 rifles, to be so equipped. Neither would law enforcement agencies all over the United States, which are concerned with the accuracy and safety with which their AR-15 patrol rifles can be fired, including in areas which may be densely populated with innocent bystanders. The pistol grip on the AR-15 stock, and pistol grips on the stocks of other semiautomatic rifles and shotguns, also do not allow these rifles to be reloaded any faster than similar firearms without pistol grips. Instead, pistol grips on semiautomatic rifles and shotguns simply provide an appropriate and comfortable way of gripping these firearms, without contorting one's hand, wrist and arm into an unnatural position.

Largely because pistol grip stocks on semiautomatic rifles have proven to be so comfortable, and to permit good control of the weapon and its controls, pistol grip stocks have in

recent years grown in popularity on semiautomatic and pump-action shotguns as well. As with pistol grip stocks on semiautomatic rifles, pistol grip stocks on semiautomatic or other shotguns do not especially permit or induce "spray firing" (whatever that means), or faster reloading of the firearms. Pistol grip stocks, commonly used on rifles and shotguns throughout most of the United States, are simply a feature the New Jersey legislature seems to have chosen to identify rifles and shotguns it wishes to make illegal.

Folding or Telescoping Stocks. Another of the prohibiting features for both semiautomatic rifles and shotguns in New Jersey, is the firearm having a "folding or telescoping stock." While the AR-15 can be equipped with a solid (that is, not telescoping) buttstock, telescoping buttstocks are far more popular, and are in fact standard on most AR-15 rifles sold today throughout the country, as well as on many other models of semiautomatic rifles.

What telescoping buttstocks do is allow for the rifle stock to be adjusted to properly fit the user. The U.S. military's current telescoping buttstock for its M4 rifle (the modern evolution of the M16) allows the stock to be set for any of four to six different lengths. This allows the rifle to be used comfortably and fired accurately by shorter-statured shooters, including female shooters among others. It also allows the rifle to be adjusted for comfortable, accurate firing from different shooting positions, as a stock length that works well in the standing position may be too long for optimum use from a sitting or kneeling position. The telescoping stock also allows the stock to be shortened when the shooter is wearing heavy clothing, as in wintertime, and lengthened when lighter clothing is worn in warmer weather. Telescoping-style adjustable stocks are used for these same reasons on many other firearms other than semiautomatic rifles, including both pump-action and semiautomatic shotguns, for example the Mossberg pump-action Model 500 Tactical and ATI Tactical shotguns.

Folding stocks, in contrast to telescoping stocks, offer law-abiding firearms users the advantage of storing the firearm more conveniently, and transporting it to and from the range in a more compact carrying case.

Bayonet Mounts. Another prohibited feature is a "bayonet mount," sometimes called a "bayonet lug." This is typically a small steel block, welded to the barrel of a firearm a few inches back from the muzzle, which can be used to attach a bayonet to the rifle or shotgun. In fact, bayonet mounts are common on many types of civilian rifles and shotguns. Again, the New Jersey statute's prohibiting of bayonet mounts, while sensational, is largely superfluous.

Flash Suppressors and Threaded Muzzles. Another of the prohibited features is a "flash suppressor," or a threaded barrel designed to accommodate a flash suppressor. A flash suppressor is a fixture on the end of a rifle's barrel that divides and diverts the muzzle flash through several slots or holes, most commonly arranged radially around the axis of the bore. The most common type of flash suppressor on AR-15 rifles is probably the Mil Spec A2 birdcage type, which has four slots from about the nine o'clock to three o'clock positions (that is, around the top 180 degrees of the suppressor), but is solid on the bottom in order not to raise clouds of dust or dirt when firing from a prone position on dry ground. Attached hereto as **Exhibit 13** is a picture of an A2 birdcage flash suppressor. Flash suppressors are not expensive accessories; for example, the Aero Precision A2 birdcage-type suppressor shown in Exhibit 13 retails for $7.99. Flash suppressors are used on the vast majority of the millions of AR-15s and similar semiautomatic rifles throughout the United States.

The major advantages of a flash suppressor on a rifle's barrel are: (1) the reduction of muzzle flash so as not to temporarily blind a shooter who is firing in a darkened environment, whether in a defensive situation or on an indoor shooting range, and (2) the reduction of muzzle flash from a military rifle, so as to minimize the illumination of the shooter, which might reveal his location to enemy troops in darkened environments. The flash suppressor also serves to protect the muzzle of the rifle from dirt, mud, sand, etc., which could dangerously plug the muzzle if it were to touch the ground outdoors. Purpose (1) above is important in a rifle used for self-defense by civilians, and legislation that prohibits flash suppressors makes rifles less suitable for self-defense use by civilians. Law enforcement statistics indicate that a high percentage of violent crime occurs during the hours of darkness, or in otherwise darkened environments (poorly lighted indoor areas, for example). Attached hereto as **Exhibit 14** is a digital article from Security Magazine, "Violent Crimes Most Likely to Occur At Night." The use of a rifle without a flash

suppressor under those circumstances is likely to temporarily blind the user, or at least seriously impair the user's vision, placing the law-abiding user at a disadvantage to a criminal attacker, and increasing the danger to the public if the vision-impaired user must fire the rifle before his or her normal visual abilities return after an unsuppressed muzzle flash in the dark. **Exhibit 15** provides an example of the difference between an AR-15's muzzle flash with no flash suppressor (Exh. 15A), and the muzzle flash when a suppressor is used (Exh. 15B).

The value of the flash suppressor in protecting the rifle's muzzle from being damaged, or from being plugged with mud, dirt or sand if the rifle's muzzle touches the ground, is significant, and is stressed by some instructors in defensive rifle classes. I have personally seen a firearm's barrel burst upon firing when the muzzle was plugged with mud after inadvertent contact with the ground. Luckily no one was injured, but the results could have been catastrophic.

A great many rifles today come standard from the manufacturers with threaded muzzles, with the threads protected by screw-off metal caps. These threaded muzzles will allow the attachment of various muzzle devices, including flash suppressors, recoil-reducing muzzle brakes, or sound suppressors (so-called "silencers"). While sound suppressors are prohibited for civilian ownership in New Jersey, they are legal, with proper federal licensing, in many other states, including nearby Pennsylvania. Contrary to their portrayal on television and in movies as instruments of crime, sound suppressors do no make the report of most firearms nearly inaudible, and the suppressors have many legitimate purposes on semiautomatic rifles used for defensive purposes, whether by police or private individuals. The most important of those legitimate purposes is to allow the user to fire the rifle, especially in indoor environments, without suffering permanent hearing loss from the sound of shots. This can occur because, unlike shooting on a firing range while wearing hearing protectors, firing a .223 rifle without hearing protection, as would likely be the case in a self-defense situation, can in many cases result in some degree of permanent hearing loss. For this reason, police departments today are often equipping their AR-15 patrol rifles with sound suppressors to protect the hearing of their police officers.

Even though sound suppressors are not legal for civilian ownership in New Jersey, and regardless of whether or not the user wishes to, or can legally, attach a flash suppressor to the

muzzle of the rifle, the fact that New Jersey's "assault firearm" statute prohibits rifles with threaded muzzles eliminates many excellent threaded-muzzle firearms from being able to be sold, purchased or possessed in New Jersey.

One of the muzzle devices a threaded muzzle allows the user to attach to a rifle is a muzzle brake, which is a recoil-reducing device. Muzzle brakes are advantageous, are preferred by many shooters, and are perfectly legal under New Jersey. But because the New Jersey law lists threaded muzzles as one of the prohibiting features, it makes it much more difficult, if not in some cases impossible, for a New Jersey gun owner to make use of a muzzle brake for his semiautomatic rifle.

Prohibited Pistol Features. The New Jersey statute also prohibits semiautomatic pistols that have the ability to accept detachable magazines and have at least two of the following features:

1. A magazine that attaches to the pistol outside of the pistol grip;
2. A threaded barrel capable of accepting a barrel extender, flash suppressor, forward handgrip, or silencer;
3. A shroud that is attached to, or partially or completely encircles, the barrel and permits the shooter to hold the firearm with the non-trigger hand without being burned; or
4. A manufactured weight of 50 ounces or more when the pistol is unloaded.

The attachment point of the pistol's magazine (item 1 above) has nothing to do with the pistol's safety. Like other features discussed above, this is a common firearm feature that is only useful as a means of criminalizing certain firearms the State wishes to ban.

Threaded barrels (item 2) have already been discussed above. Increasing numbers of handguns today come from the factory with threaded muzzles. The advantages of a flash suppressor have already been discussed, and will not be covered again here. Flash suppressors are, in any event, rarely used on handguns. Silencers are illegal for ownership by private

individuals in New Jersey, so it seems fairly senseless to prohibit a pistol with a threaded barrel simply because that feature might allow the pistol to be fitted with a silencer. A "barrel extender" is usually a purely cosmetic feature, affecting only the appearance of the handgun. A forward handgrip may allow some people to hold pistol more firmly and fire it more accurately.

A barrel shroud (item 3 above) serves to protect the shooter's hand from being burned by a barrel that has become hot from firing. Barrel shrouds have been commonly used on rifle and shotgun barrels since the early 1900's, and are available on many rifles and shotguns today.

The total weight of the handgun (item 4 above), at 50 ounces when unloaded, makes the described firearm unusually large and heavy for a handgun. This, in turn, makes the handgun less easily concealed and carried. It is difficult to see how this forms a valid basis for prohibiting a firearm.

Shotgun Magazine Capacity. Another of the prohibited features is a semiautomatic shogun with a fixed magazine capacity of over five rounds. Many semiautomatic shotguns intended for self-defense use have magazine capacity of over five rounds. The Mossberg 930 (8-shot capacity) and several of the excellent Benelli tactical shotguns are examples. Because shotguns with fixed (i.e., tubular) magazines must be reloaded one round at a time – a slow and difficult process at best in a stressful self-defense situation – the magazine capacity of the shotgun is an important feature, as larger capacity reduces the likelihood that reloading during the midst of a self-defense shooting incident will be necessary.

Conclusion

New Jersey's so-called "assault weapon" legislation appears to focus primarily on cosmetic features of firearms. In fact, the AR-15 is just another semiautomatic rifle, a type of firearm that has existed since about 1900. The AR-15 is, in many cases, an excellent rifle for law-abiding citizens to use for self-defense, as well as for target shooting, recreational shooting, and hunting or control of predators, rodents and other pest animals where game laws permit. Features such as flash suppressors, threads at the muzzle end of the barrel, pistol grips, telescoping or folding stocks, bayonet mounts, and the other features discussed above serve to criminalize rifles and shotguns, widely used by the tens of millions throughout most of the United States, that are

useful, accurate, and safe for law-abiding citizens to use. Pistol grips, flash suppressors, threaded muzzles, telescoping or folding stocks, detachable magazines for semiautomatic rifles, and shotgun magazine capacity in excess of five rounds, all have legitimate advantages to the law-abiding user. It appears that this legislation is either ill-informed, or that its intent is to prohibit some of the most widely used – because they are the most useful – firearms in existence in the United States, which are regularly chosen by law-abiding Americans to protect themselves and their loved-ones from violent crime.

Among the specific facts and opinions I have expressed in the foregoing report are the following:

1. Semi-automatic handguns, rifles and shotguns are not new, "evil" creations, but have been in use since before 1900.
2. The AR-15, AK-type, and similar semiautomatic rifles are owned and used by millions of law-abiding Americans for lawful purposes including self-protection, recreational shooting, hunting, and pest control.
3. 20-round and 30-round semiautomatic rifle magazines are not "large capacity ammunition magazines," as the New Jersey law misleadingly states. To the contrary, these are the standard-sized magazines for many of the semiautomatic rifles addressed in this lawsuit.
4. Similarly, semiautomatic pistol magazines with capacities greater than 10 rounds are not "large capacity ammunition magazines," but are, in many cases, the standard-sized magazines for those pistols.
5. AR-15 rifles and similar rifles are accurate, reliable, safe and easy to use effectively, which is why these rifles are often the firearms chosen by law enforcement and by private individuals for defensive use.
6. Limiting New Jersey gun owners to 10-round magazines for their semiautomatic rifles and pistols imposes an unreasonable and arbitrary disadvantage on them, which negatively affects their ability to defend themselves and their loved ones against violent criminal attack.
7. Pistol grips on semiautomatic rifles and shotguns are not "evil" features, but have

practical advantages in allowing the firearms to be controlled and fired accurately. On the AR-15, for example, these advantages are why Eugene Stoner, one of the world's foremost firearms designers, designed the AR-15 with a pistol grip rather than with some other kind of stock.

8. Telescoping stocks are not "evil" features, but can be adjusted to allow rifles and shotguns to be handled and fired effectively by shooters of various statures, in various shooting positions, and when wearing various types of clothing or equipment.
9. Folding and telescoping stocks for rifles and shotguns allow the firearms to be stored more conveniently, and transported more easily. Prohibiting bayonet mounts makes many excellent rifles and shotgun unavailable for sale to or ownership by New Jersey gun users.
10. Flash suppressors, which are very commonly possessed and used throughout the United States on AR-15s and other semiautomatic rifles, have a valuable purpose, make the rifles safer to use in dim light, and improve public safety as well.
11. The prohibition of threaded muzzles makes many excellent firearms unavailable for sale to or ownership by New Jersey gun users. The prohibition of threaded muzzles also makes it difficult or impossible for New Jersey gun users to use muzzle brakes – a perfectly legal device which valuable recoil-reducing advantages – on their firearms.
12. Some of the prohibited features in the handgun section of the law, such as barrel shrouds, provide specific, legitimate advantages to the firearms user. Other prohibited handgun features, such as where the magazine attaches to the handgun, or whether the handgun has a barrel extender, are arbitrary. The overall effect of the handgun section is simply to criminalize various handguns, based on an arbitrary list of features.
13. Especially given the slowness and difficulty of reloading a tubular-magazine shotgun during the stress of a self-defense confrontation, the limitation of semiautomatic shotguns to a capacity of 5 rounds places New Jersey gun users at a significant disadvantage in confrontations with violent criminal attackers.

All of the facts and opinions I have expressed in this report are accurate to a reasonable degree of professional certainty in my fields of expertise.

Very truly yours,

Emanuel Kapelsohn, President

EXHIBIT "1"

CURRICULUM VITAE: EMANUEL KAPELSOHN

PERSONAL DATA:

Born: April 23, 1952. Newark, NJ
Marital Status: Married, two children
Address: 1636 N. Cedar Crest Blvd. #320, Allentown, PA 18104
Telephone: 610-360-7053
Email: peregrine@ptd.net

ACADEMIC DEGREES:

Yale University. B.A. cum laude. English Literature (1974)
Activity: Varsity Heavyweight Crew (earned Varsity Letter)

Harvard Law School. Juris Doctor (1977)
Activity: Harvard Prison Legal Assistance Project

EMPLOYMENT:

1985 -	President. The Peregrine Corporation. Design, evaluation and implementation of training programs for police, security, and other armed personnel and civilians throughout the United States and abroad, including use of force, firearms, defensive tactics, executive protection, and specialized training; instructor and armorer training and certification; consulting with regard to the selection of firearms and other equipment; technical evaluation and consulting regarding design and function of firearms and related products; security surveys and risk assessments; litigation consulting and expert witness services; production of videotape training programs, written training materials, training aids, product literature and warnings; writing articles for publication in law enforcement and firearms periodicals.
2009-10	Adjunct Instructor, Criminal Justice Department, Indiana University, Bloomington, IN. Taught Senior Seminar, "Police Use of Force" (2009, 2010)
2007 -	Attorney. Lesavoy Butz & Seitz LLC. Allentown, PA. Civil litigation, municipal law, general practice, risk management. 2007 to present.
2006-7	Associate. Lamm Rubenstone Lesavoy Butz & David LLC. Allentown, PA . Civil litigation, municipal law, general practice.
1994 - 2006	Associate. Blank Rome LLP, Allentown, PA. Civil litigation, including state and federal court practice. Bar admissions: Pennsylvania Supreme Court, Federal District Courts for the Eastern and Middle Districts of Pennsylvania and the Northern District of New York.
1982-5	Firearms Training Consultant (self-employed). Firearms instruction for police, security and other armed personnel and civilians; consulting and expert witness services; writing articles for publication in firearms periodicals.
1984-5	Director of Security. Jasna Polana, Princeton, NJ. Private estate security, executive protection and protection of valuables in transit. Responsibilities included hiring and training armed security officers, scheduling, design and implementation of operational procedures, supervision, planning of special operations, dealing with vendors of security equipment and services, and interfacing with law enforcement and other public agencies.
1979-83	Operative. The Spiesman Agency, New York, NY. Occasional part-time detective work including surveillance, criminal and civil investigations, interviewing of witnesses, process service, and bodyguarding.

1977-82 Associate; Senior Associate. Friedman & Gass, P.C., 99 Park Avenue, New York, NY. Commercial litigation, including trial and appellate practice in state and federal courts throughout the United States for major domestic corporations. Bar admissions: New York Supreme Court; Federal District Courts for the Southern and Eastern Districts of New York, Western District of Pennsylvania, and District of Utah; U.S. Court of Appeals for the 10th Circuit; U.S. Armed Services Board of Contract Appeals, Washington, D.C.

FIREARMS TRAINING QUALIFICATIONS:

FBI-Certified Firearms Instructor
Instructor, Burlington County (NJ) Police Academy (1986-1995)
Instructor, Allentown (PA) Police Academy (1999-2007)
Technical Editor, The Police Marksman Magazine (1987-1990)
Contributing Editor, Special Weapons and Tactics Magazine (1983-1986)
Editor, The Firearms Instructor (1994-1995)
Editorial Committee, The Firearms Instructor (1988-94, 1996-97, 2001- 2002)

International Association of Law Enforcement Firearms Instructors (IALEFI) Active Member (1984-); Member, Board of Directors (1987-); Third Vice President (1991- 2011); Second Vice President (2012-2015); First Vice-President (2015-)Chairman, Firearms Training Criteria Committee (1995-2016); Chairman, Corporate Sponsorship Committee (1987-1990); Chairman, Instructor Certification Committee (1988-1990); Chairman, Safety Committee (1995- 2003); Member, Safety Committee (2003-); Member, Legal Committee (1987-1999); Chairman, Legal Committee (1999-); Chairman, Editorial Committee (1994-1995); Member, Editorial Committee (1988-1994, 1996-1997; 2001-2003); Chairman, Firearms Training Standards Subcommittee (1992-95); Member, Instructor Criteria Committee (1996-); Member, By-Laws Committee (1999-2002; 2016-); Member, Ethics Committee (2003-). Principal Author or Associate Editor of several IALEFI publications – see below. Originator, IALEFI Handgun Safety Check. Designer, IALEFI Q target series. Member, Instructor Certification Committee (2010 - 2011). Chairman, Instructor Criteria Committee (2020 -).

Member, National Advisory Board, Police Marksman Association (1986-2006)
Special Police Officer, Lawrence Twp. Police Department (1986)
Reserve Deputy Sheriff, Cleveland County Sheriff's Office (1988-1991)
Reserve Lieutenant, Albee-Maple Grove Police Department (1989-1990)
Special Deputy Sheriff, Salt Lake County Sheriff's Office (1992-2006)
Special Deputy Sheriff, Berks County (PA) Sheriff's Department (1997-)
Reserve Deputy Sheriff, Greene County (IN) Sheriff's Reserve (June 2008-2012)
Staff Instructor in Pistol, Shotgun, and Rifle at the American Pistol Institute (Col. Jeff Cooper, Director) (1980-1982)
Senior Affiliate Instructor, Defense Training International (John S. Farnam, President); DTI Instructor Update (2020)
Instructor, Executive Security International (Aspen, Colorado 1986-1988)
NJ Police Training Commission-Certified Firearms Instructor
Pennsylvania Municipal Police Officers Education & Training Commission - Certified Instructor (MPI # 1360, General Instruction, Special Instruction -

Firearms, Application of Force)
NRA-Certified Police Firearms Instructor
NRA-Certified Security Firearms Instructor
NRA-Certified Law Enforcement Rifle Instructor
NRA-Certified Practical Firearms Instructor (Personal Protection)
NRA-Certified Pistol Instructor
NRA- Certified Rifle Instructor
NRA-Certified Shotgun Instructor
NRA-Certified Law Enforcement Submachine Gun Instructor
NRA-Certified Home Firearms Responsibility Instructor
NRA-Certified Police Tactical Firearms Instructor
NRA-Certified Chief Range Safety Officer
NRA-Certified Police Precision Rifle Instructor
H&K-Certified MP-5 User
H&K-Certified MP-5 Instructor
SIG Pistol Armorer
Glock Pistol Armorer
Glock Pistol Armorer Trainer
Mossberg Shotgun Armorer
Mossberg Shotgun Armorer Trainer. Developed and presented armorer training programs for O.F. Mossberg & Sons, Inc. for Models 500, 590 and 590DA shotguns, including consulting on revisions of Armorer's Manual and development of related training materials including student handouts, written and practical examinations, visual aids, etc. Trained other Armorer-Instructors for Mossberg.
Colt Rifle and Submachine Gun Armorer
NLETC-Certified Lindell Handgun Retention Systems Intermediate Trainer
Glock Authorized Transitional Training Consultant. Designed and taught armorers and firearms instructor courses on a contract basis for Glock, Inc. from approximately 1987 through 1993, including development of instructor notebook and related materials, student handouts, written tests, qualification standards, visual aids, etc. (See below for specific course dates and locations.)
Justice System Training Assoc.-Certified Psycho-Motor Skill Design Instructor
Certified Police Defensive Tactics Instructor
Firearms Instructor and Safety Officer, U.S. Treasury Department Pistol Club, New York, NY (1980-83)
"A" Class IPSC Pistol Competitor
Executive Protection Specialist License (State of Colorado)
Certified Agent, Pennsylvania Lethal Weapons Act (Act 235)
Certified ASP Baton Instructor
OCAT-Certified Pepper-Spray Instructor
Certified FATS Instructor Trainer
NTOA - Certified Less Lethal Impact Munitions Instructor
Taser Master Instructor
Light Rifle Expert (NRA Rating)
Smallbore Rifle Expert (NRA Rating)
General Rifle Expert (API Rating)
Pistol Expert (NRA and API Ratings)
Revolver Expert (NRA Rating)

Handgun Distinguished Expert (NRA Rating)
Shotgun Expert (NRA and API Ratings)
Submachine Gun Expert (NRA Rating)
Federal Firearms Licensee and Class III Licensee
Designer and copyright holder, IALEFI-Q, IALEFI-QP, IALEFI-QR and derivative targets (millions used by numerous law enforcement agencies, and academies nationwide; used worldwide by U.S. Marine Corps Security Detail – U.S. Embassy security; Wyoming Law Enforcement Academy target; Wisconsin DOJ training target; Commonwealth of Massachusetts Training Target, et al.)

Testified regarding firearms before the United States Senate Judiciary Committee (Subcommittee on the Constitution), United States House of Representatives Judiciary Committee (Subcommittee on Crime), New York City Council, New Jersey Assembly Committee on Law and Public Safety, Massachusetts General Assembly Committee on Law and Public Safety, and Florida Legislature Committee on Law and Public Safety, California DOJ

Selected by Citizen Ambassador Program as Delegation Leader for American Law Enforcement Firearms Instructors Exchange Program to China, planned for Spring 1988 (trip did not occur).

Consultant to Sturm, Ruger & Co. regarding law enforcement firearms and development of law enforcement firearms training programs. Presented several demonstrations and familiarization courses with Ruger service pistols at police academies and agencies in Canada, including RCMP Academy, Regina, Canada

Consultant to Springfield Armory regarding development of self-defense handguns for the civilian consumers.

Boy Scouts of America, Merit Badge Counselor for Rifle and Shotgun
New York State IPSC Championships (1979): 5th place overall
Second Chance Competition (Central Lake, Michigan 1983): Shot pump-action shotgun on 3-man team that place high nationally, winning rifles.
National Tactical Invitational, Harrisburg, PA (1992): 7th place overall
National Tactical Invitational, Harrisburg, PA (1993): 4th place overall
IALEFI Stephen House Memorial Match, Reno, NV (1993): 6th place overall
IALEFI Stephen House Memorial Match, Amarillo, TX (1994): 11th place o/a

As a firearms instructor and/or consultant in training and use of force, or as a sworn, armed reserve deputy sheriff or special deputy, have spent many hundreds of hours accompanying police and security officers and/or engaging in patrol and enforcement activities throughout the United States and several foreign countries, in activities including routine patrol, traffic enforcement, armored transport, security of facilities and protection of persons and valuables, vehicular and foot pursuits, K-9 searches, response to crimes in progress, raids and warrant service, arrests, response to shootings and other violent events, arrests at gunpoint, searches of vehicles and persons, response to threatened suicides, alarm response, prisoner transports, road blocks and checkpoints, domestic disturbances, barricaded gunman, mentally ill or emotionally disturbed

persons, response to vehicle accidents, traffic control, policing public events.

Qualified as expert witness by state courts in Connecticut, New York, New Jersey, Pennsylvania, Maryland, Delaware, Tennessee, Georgia, Florida, Louisiana, Arizona, Wisconsin, Minnesota, Michigan, Ohio, Illinois, Iowa, Mississippi, Kentucky, West Virginia and California, and federal courts in Connecticut, California, New York, New Jersey, Pennsylvania, Tennessee, Florida, Louisiana, Maryland, Illinois, Arkansas, Oregon and Montana; consulted and testified on subjects including firearms, firearms training, safety, use, functioning, operability, maintenance and design; inspection and testing of firearms; holster design and weapon retention; firearms accidents; involuntary muscular contraction and unintentional discharge of firearms; physiological and perceptual/psychological effects of gunfight stress ("adrenalin dump," "fight or flight syndrome" or "body alarm reaction") including tunnel vision, auditory exclusion, time distortion, tachypsychia, schema; distinguishing toy guns, airguns and other objects from firearms; firearms-related tactics and police procedures; covering of suspects at gunpoint; defensive tactics; use of force in correctional facilities; training psychomotor skills; gunfight statistics and conditions; written training and use materials, including warnings and user's manuals; ammunition and ballistics, including bullet trajectories, trajectories through glass; ricochets, bullet penetration and expansion, gunshot wound ballistics, ability of individuals to continue physical activity after being shot; behavior of projectiles upon striking steel and other surfaces, cartridge pressures, cartridge case ejection patterns, muzzle flash, and gunshot noise; reaction time and action vs. reaction; time for suspect to turn his body compared to time required for officer to fire shot ("suspects shot in back"); threat level assessment and justification for use of deadly and non-deadly force; movements, police pursuits and use of force during police pursuits; tactics; arrest procedures; firearms history and development; firearms recoil; firearms toolmarks; non-powder guns; vision, threat assessment and shooting under reduced light conditions; performance of human eye when aiming and firing firearms; concealability of firearms; firing range design, safety and maintenance; paintball and other non-powder guns; ammunition reloading and inspection; home storage of firearms; so-called "Saturday Night Specials;" knife threats; use of "OC" (pepper spray); Taser; speed of firing shots; "21 Foot Rule" and time to cover distances; action vs. reaction, reconstruction of shooting scenes; muzzle to target proximity; powder stippling and other close-range ballistic effects; video evidence, improvised impact weapons, etc.

Clients and parties on behalf of whom cases have been undertaken have included the U.S. Department of Justice, Department of Energy, and Drug Enforcement Administration; Judge Advocate General Corps; Attorney General's Offices of Pennsylvania, Wyoming, South Dakota, and Louisiana; Atlantic County (NJ) Prosecutor's Office; Monroe County (PA) District Attorney's Office; Cumberland County (PA) and Centre County (PA) District Attorney's Offices; Kenosha County (WI) District Attorney's Office; State of Georgia (Atlanta Judicial District); Cities of Pittsburgh (PA), Newark (NJ), Bridgeport (CT), Egg Harbor City (NJ); Town of East Haven (CT); Chicago; New York; San Diego (City and County); Jacksonville; Nashville; Milwaukee; Public Defender's

Offices of Monroe County, Clarion County and Lycoming County (PA); State's Attorney's Office in Devil's Lake (ND); State of Delaware Public Defender's Office; Delaware Department of Justice; Bianchi International; Safariland, Inc.; Glock, Inc., O. F. Mossberg & Sons, Para-Ordnance Mfg, Inc., SigArms, Inc.; Remington Arms; private attorneys representing defendants in criminal and administrative proceedings, and private attorneys representing plaintiffs and defendants in civil cases.

Advisory Board Member, Firearm Injury Research Project (national research project conducted through FICAP at University of Pennsylvania) 2001-2005

Member, Firearms Section (formerly Firearms Committee), American Society of Law Enforcement Trainers (2000-2003)

Consultant to Pennsylvania Municipal Police Officers Education and Training Commission (pro bono) on development of new firearms and use of force curriculum for use at police academies throughout the state; revision of firearms and use of force curriculum in 2015 after 14 years of statewide use; development of use of force mandatory in-service training program (2015), including pilot program and instructor-training program.

Consultant to Allentown Jewish Community Center on security issues (pro bono, 1998-2000)

Consultant to The Swain School, Allentown, PA, on school security issues (pro bono, 1999-2003)

Consultant to Faith Church, Trexlertown, PA on security issues (pro bono, 2017-)

Para-Ordnance Armorer-Trainer and Instructor-Trainer. Under contract with Para-Ordnance Mfg. Co., developed and presented armorer and instructor training programs.

Kimber Pistol Armorer-Trainer and Instructor-Trainer. Under contract with the City of Tacoma, and as authorized by Kimber Mfg. Co., developed and presented law enforcement armorer and instructor training programs, including writing armorer notebook, instructor notebook, and related materials.

Hunter since age 10: varmints and small game (New Jersey, Pennsylvania, Indiana); deer (New York, New Hampshire, Pennsylvania, Alabama, Louisiana, Indiana); pheasant and partridge (Pennsylvania, New Jersey); ducks Louisiana); dove (Pennsylvania); woodcock (Connecticut); wild boar (NH, TX, OH).

Handloader and reloader of ammunition, including bullet casting (1978 -)

Oregon Department of Public Safety Standards & Training – Certified Firearms Instructor (2002)

Commonwealth of Pennsylvania, Municipal Police Officers Education & Training Commission, subject matter expert - member of standing Firearms Committee developing guidelines, policy and standards on firearms issues; member of committee developing state-wide standards for police patrol rifle (2003 -)

Good Shepherd Hospital Charity Sporting Clays Tournament (2002, 2004, 2005)

Consultant to City of Easton regarding Easton Police Department firearms training, policies and procedures, and Easton SWAT Team (2005).

Certified Benelli Shotgun Armorer (2006)

Chairman, Firearms Committee, Berks County Sheriff's Department. Chaired departmental committee hearings, making determinations with regard to intentional and accidental shootings.

Consultant to Lehigh County Municipal Emergency Response Team ("MERT") regarding use of force policies (2006-2007).
Consultant to California U. of Pennsylvania re. firearms and use of force policy
U.S. Department of Justice: included on list of attorneys selected to provide emergency interim legal representation of federal agents involved in shootings (2000-).
Invited by Chinese government to travel to China to teach police firearms instructors (2010; declined invitation)
"Governor's Award," Indiana Police Firearms Training Association (2010)
Recipient, 2012 IALEFI "Charlie Smith Award" ("In recognition of your tireless efforts and unwavering loyalty to the goals, ideals, and members of our organization.")
Appointed to Advisory Board, Armed Citizens Legal Defense Network (2012)
Consultant to PA MPOETC in revision of police academy curriculum (2014-15), and development of Mandatory In-Service "Use of Force" program taught to 25,000 police officers statewide, including teaching of pilot program and conducting instructor-training program.
FASTER-certified Intervention Specialist (Chris Cerino and Andrew Blubaugh, Instructors, Rittman, Ohio 2018)
Rangemaster-certified Firearms Instructor (Tom Givens, Instructor, Xenia, Ohio 2018)
Advanced Force Science Specialist, Force Science Institute (2018) (see below)
UTM Professional Training Organization ("PTO") certification
Realistic De-Escalation Instructor, Force Science Institute (2021) (see below)

TRAINING COURSES ATTENDED:

API Basic Pistol Course (1979): Expert rating; finished second in class
API Special Pistol Course (1980): Expert rating; finished first in class
API Defensive Shotgun Course (1981): Expert rating; finished second in class.
API Rifle Course (1983): Expert rating; finished third in class.
American Small Arms Academy, Submachine gun tutorial, Chuck Taylor (1981)
Police Marksman Association Police Officer Advanced Street Survival Seminar (Instructors Massad Ayoob, Ray Chapman, Jim Morell, et al., 1983): Certif.
Defense Training International, Defensive Handgun/Defensive Submachine Gun (1983): Certificate
Red Cross First Aid Course (1984): Certificate
Red Cross CPR Course (1984): Certificate
Red Cross CPR Course (1991): Certificate
New Jersey Hunter Safety Courses (1966, 1967, 1968): Certificates
NRA Security Firearms Instructor School (FBI Academy, Quantico, VA 1984): Pistol Expert, Revolver Expert, and Shotgun Expert: Certificates
Law Enforcement Training - Survival 3 Seminar (1984): Certificate
International Police Academy - Morell-Trained Instructors Seminar (Instructors Jim Morell and John Desmedt, 1984): Certificates of Training in Principles of Control and in Advanced Instructor Training
BSR Counter-Terrorist Driving School (Summit Point Raceway, West Virginia, 1984): Certificate

International Police Academy - Defensive Tactics Instructor Level 1 (Sampson Technical College, Clinton, NC 1984): Certificate
FBI Firearms Instructors Course (Burlington County Police Academy, 1985): Certificate
International Police Academy - Master Instructors Seminar (Instructors Morell, Desmedt, et al., 1985): Certificate and Guest Instructor Award
1984 National Training Conference, International Association of Law Enforcement Firearms Instructors (Nashville, TN): Certificate
91st Annual Conference, International Association of Chiefs of Police (Salt Lake City, UT 1984)
LAPD Ordnance Exposition (Los Angeles 1984): Seminars on Handgun Survival; Firearms Evidence; Officer-Involved Shooting Incidents: Certificates
ESI Advanced Executive Protection Program (Aspen, CO 1985): Certificate and State of Colorado Executive Protection Specialist License
1985 National Training Conference, International Association of Law Enforcement Firearms Instructors (Philadelphia, Police Academy): Certificate. Presented instructor-level class on close-range shooting techniques
U.S. Marshal Service Automatic Weapons and Officer Survival Course (North Carolina 1985): Certificate
Tactical Response Association Ordnance Exposition (Las Vegas, 1986): Attended seminars on Rapelling SAS Method, Shooting Simulation Response Course, Satanic Cults and Crimes, Terrorism Perspective 1986, and International Terrorism Symposium: Certificates
NRA Law Enforcement Rifle Instructor School (U.S. Marine Base, Quantico, VA 1986): Scored 99.33% on firing test: Certificate
1986 National Training Conference, International Association of Law Enforcement Firearms Instructors (Orlando, FL): Certificate. Presented instructor-level classes on Dim-Light Handgun Shooting; Police Shotgun
International Police Academy - Straight Baton Class (Instructor Jim Morell, Allentown, PA 1986): Certificate
Department of Defense Tactical Team Training Seminar (ARDEC, 1986): Certificate
Calibre Press Street Survival Seminar (Atlantic City, NJ 1986): Certificate
Tactical Response Association World Conference on Terrorism (Washington, D.C. 1987): Attended seminars on GSG 9 Tactics, Hostage Negotiation, and Making of SWAT Teams: Certificate
Glock Armorer's Course (Beltsville, MD 1987): Certificate
Ordnance Expo '87 (Chicago, IL): Attended seminars on Vicarious Liability for Law Enforcement/Psychological Screening of Officers; Indoor and Outdoor Range Design; Tactical Load-Bearing Vests for Special Operations; and Revolvers vs Semi-automatic Pistols
NLETC Lindell Handgun Retention System Course (1987): Intermediate Trainer Certification
1987 National Training Conference, International Association of Law Enforcement Firearms Instructors (Mesa, AZ): Certificate. Presented instructor-level classes on tactical use of cover.
NRA Law Enforcement Semi-Automatic Pistol Seminar (U.S. Marine Base, Quantico, VA 1987). Attended and served as Chief Instructor for this course.

NRA National Instructors Conference (Orlando, FL 1988): Attended sessions on NRA Personal Protection Course and on Modern Rifle Training Techniques

Tactical Operations Seminar (Law Enforcement Defensive Systems. New Jersey 1988. Instructor Robert J. O'Brien): Certificate

AAI Corporation Law Enforcement Chemical Munitions Training Program (New Jersey 1988): Certificate

Factory Tours and Visits: Colt Firearms (Hartford, CT); Smith & Wesson (Springfield, MA); Mossberg (North Haven, CT); U.S. Repeating Arms Co. (New Haven, CT); Sturm Ruger & Co. (New Hampshire and Prescott, AZ); Winchester (East Alton, IL); Swartklip Munitions (South Africa); Glock Gesmbh. (Austria); AV Technologies (Michigan); Second Chance Body Armor (Michigan); Para-Ordnance (Toronto); Keystone Sporting Arms (Milton, PA); Kimber Mfg. Co. (New York); Mossberg/Maverick Arms (Eagle Pass, TX); Glock, Inc. (Smyrna, GA 1989, 2014 and subsequent); Gould & Goodrich Holsters (Lillington, NC) 2017.

SHOT Shows and NRA Annual Shows: attended various years 1984-2016 et seq.

Museums visited (arms and armor collections) include Winchester Gun Museum (New Haven, CT), Museum of the Confederacy (Richmond, VA), Arms and Armor Museum (Kutztown, PA), Metropolitan Museum Arms and Armor Collection (New York, NY), National Firearms Museum (Fairfax, VA), U.S. Marine Corps Museum (Quantico, VA 1987), West Point Museum (West Point, NY), Pennsylvania State Police Weapons Collection (Hershey, PA), U.S. Army Ordnance Museum (Aberdeen Proving Grounds, MD), Texas Rangers Museum (San Antonio, TX), and private tour of Division Balistique, Laboratoire de Police Scientifique at Police Headquarters, Paris, France (ballistics laboratory and weapons collection); National Museum of the Marine Corps (Quantico, VA 2008).

Visit to G.I.G.N. Headquarters to observe firearms training and facilities (French Gendarmerie Counter-terrorist and Hostage Rescue Team), Versailles, France (2008)

SIGARMS Law Enforcement Firearms Familiarization Course (October 1988): Certificate

1988 National Training Conference, International Association of Law Enforcement Firearms Instructors (St. Augustine, Florida): Certificate. Presented instructor-level class on dim-light assault rifle and shotgun techniques; moderated panel discussion on semi-auto pistol transition training.

Second International Training Seminar, American Society of Law Enforcement Trainers (Kansas City, Missouri 1989): Certificate. Presented instructor-level classes on draw and close-range handgun techniques; attended classes on training female officers, straight baton techniques, maximization of revolver skills, and teaching psychomotor skills

Wound Ballistics Seminar (Instructors Dr. Martin L. Fackler, M.D., et al.) Phoenix, Arizona 1989): Certificate

1989 National Training Conference, International Association of Law Enforcement Firearms Instructors (Salt Lake City, Utah): Certificate. Presented instructor-level class on dim-light assault rifle/shotgun techniques

NRA Law Enforcement Submachine Gun Instructor Development School (Burlington County NJ Police Academy 1989): Certificate

H&K MP-5 Submachine Gun Course (Sterling, VA 1989): Certificate

H&K MP-5 Instructor Course (Sterling, VA 1989): Certificate
SIG Pistol Armorer's School (Richmond, VA 1990): Certificate
1990 Annual Training Conference, International Association of Law Enforcement Firearms Instructors (Washington, D.C.): Certificate. Attended courses on range control, use of cover, and shotgun. Presented instructor-level classes on concealed carry handgun, auto-pistol transitional training, and dim-light handgun and shotgun; participated in panel discussion of police handgun caliber selection and effectiveness
IALEFI Regional Training Conference (Dutchess County, NY 1991): Presented classes on cover mode and involuntary discharge; advanced shotgun techniques. Attended classes on use of lethal force (Lt. James Garside) and advanced auto-pistol techniques (S&W Academy Staff)
1991 Annual Training Conference, Internat'l Association of Law Enforcement Firearms Instructors (Mesa, AZ): Certificate. Attended courses on concealed carry, range training vs. real world, utilization of steel targets, Berkeley shooting incident, wound ballistics (Fackler), perception vs. reality in use of lethal force (Garside), and handgun inspection. Courses taught: see below
Police Long Rifle Certification Course, International Association of Chiefs of Police (Ft. Dix, NJ 1991)
American Society of Law Enforcement Trainers Fifth International Training Seminar (Milwaukee 1992): Certificate. Attended courses on wound ballistics (Marshall), dealing with the hostile learner, principles of adult learning. Courses taught: see below
IALEFI Regional Training Conference (Dutchess County, NY 1992): Attended classes on bullet performance (Ayoob), semi-automatic police shotgun (Felter), and tactical handgun (Hackathorn): Certificate. Courses taught: see below
IALEFI Regional Training Conference (Long Island, NY 1992): Attended class on counter-sniper rifle: Certificate. Courses taught: see below
Ken Hackathorn Tactical Firearms Course (Pottsville, PA 1992) for handgun, shotgun, and submachine gun: Certificate
1992 IALEFI Annual Training Conference (Tampa, FL): Certificate. Attended courses on tactical handgun (Halleck/Odle); Close Quarters Firearms Control Tactics (Klugiewicz); Reaction vs. Precision Shooting (Rogers); Tactical Planning Principles/Cover Utilization (Casavant). Courses taught: see below
Police Counter-Sniper Rifle Course, Instructor Group, U.S. Army Marksmanship Training Unit (Ft. Benning, GA 1992): Certificate
Real Life Personal Security Program (Dale Yeager, Instr. Pottstown, PA 1993)
1993 IALEFI Annual Training Conference (Reno, NV): Certificate. Attended courses on Tactical Handgun (Campbell), Planning for Critical Incidents (Cassavant), Gunfight Dynamics (Repass, et al.). Courses taught: see below
IALEFI Regional Training Conference (Nassau County, NY 1993): Certificate. Attended classes on use of force continuum and perception (Garside); realistic knife defense. Courses taught: see below.
Aerosol Chemical Restraint User Class (Wernersville Police Department, 1993): Certificate
1994 IALEFI Annual Training Conference, Orlando, FL: Certificate. Attended courses on Dynamic Teaching Techniques (R. Lindsey); Defensive Tactics for Women (Sgt. Pam Miller). Coordinated safety for all training events. Courses taught: see below

Search & Rescue Tracking, Ashmore Enterprises (CT (1994): Certificate
Management of Workplace Violence, ASIS, Reading, PA (1994).
CPR and Emergency Cardiac Care Provider course, American Heart Association, and Oxygen Therapy Emergency Response Training, SOS Technologies (OTI authorized) (1995, recert. 1996, 1999)
Colt Armorer Course (Ct. 1995): Certificate
LFI-1: Judicious Use of Deadly Force (Lethal Force Institute, Massad Ayoob, Instr. 1995): Certificate
1995 IALEFI ATC, Amarillo, TX: Certificate. Attended course on Law Enforcement Officers Flying Armed (FAA approved course: Certificate)
OCAT Oleoresin Capsicum Aerosol Instructor Training, Harrisburg Area Community College (1996): Certificate
Concealed Carry Handgun Course, Arizona Law Enforcement Firearms Instr. Annual Training Conference, Mesa, AZ (1996): Mark Fricke, Instructor
NRA Law Enforcement Tactical Firearms Instructor School, U.S. Marine Base, Quantico, VA (1996): Certificate
Urban Rifle Course, Thunder Ranch, TX (Clint Smith, Instr. 1996): Certificate
1996 IALEFI ATC, Mesa, AZ: Certificate. Attended courses on Weapon Defense (Klugiewicz); Officer Survival (FBI). Coordinated safety for all events. Courses taught: see below
Defensive Tactics/Personal Weapons Course, Paradigm Training (1997): Certificate
FATS Instructor-Trainer Certification Course (MPOETC, Harrisburg, PA 1997): Certificate
1997 IALEFI ATC, Columbia, Missouri: Certificate. Attended courses on Protective Detail Training (Wilt); Sharpening the Warrior's Edge (Bruce Siddle); Use of the Handgun In A Hostile Environment (Spaulding); and The Bulletproof Mind (Lt. Col. Dave Grossman). Coordinated safety for all events. Courses taught: see below
NTOA Tactical Technologies Expo (Philadelphia, 1998): Attended courses on Domestic Terrorism, Less Lethal Projectiles, and U.S. Military's Warfighting Laboratory Project. Certificate
Security for Overseas Travel. Vance International, Reading, PA, 1998
NTOA Less Lethal Impact Munitions Instructor Course, Bucks County Police Academy (1998): Certificate
Oleoresin Capsicum Aerosol User's Course, Paradigm Consulting Corp. (1998): Certificate
Monadnock Expandable/Straight Baton Advanced Course (Tim Lynch, Instr.) 1998: Certificate
1998 IALEFI ATC, West Palm Beach, FL: Certificate. Attended courses on Training Injuries and Deaths (Kat Kelly/Robert Bragg); Confined Space Weapons Engagement (Slowik); The Bulletproof Mind (Lt. Col. D. Grossman)
Taser Master Instructor Course (Instructor Rick Smith. VA, 1999): Certificate
IALEFI RTC, Philadelphia Police Academy, PA (1999): Certificate. Attended courses on Patrol Rifle Course Design; Practical Shotgun Skills; and Dim Light Training Techniques
Pennsylvania Hunter Safety Course (1999): Certificate
1999 IALEFI ATC, Phoenix, AZ: Certificate. Attended courses on Innovative Training on a Limited Budget; Mental Preparation for Armed Confrontations

(Croty); Edged Weapons (Lynn Thompson); Instructor Development (Wilt); and Recreation of Officer-Involved Shootings (Westrick)

2000 ASLET International Training Seminar, Richmond, VA: Certificate. Attended courses on Patrol Rifle Training Programs; Building Search (contin.) Tactics; Use of Deadly Force; Maximizing Time & Budget in Firearms Training; Post-Shooting Procedures (Grassi); Backup & Contact/Cover Principles; Firearm Retention & Disarming (Demetriou); Advanced Firearms Instructor Training (FBI Training Cadre); Training Female Shooters; Protocol for Major Use of Force Investigations (Michael Stone, Esq.); Point Shooting (Lovette). Trained on use of force simulators (FATS, Caswell AIS, American Laser Technologies)

IALEFI RTC, Philadelphia Police Academy (2000): attended courses on Response to Active Shooters in Schools (L. Glick); Dim-Light Shotgun Skills (Boyle). Courses taught: see below

Gunshot Wounds Seminar, Reading, PA 2000. J. Holliman, M.D., Instructor

2000 IALEFI ATC, Tampa, FL: Certificate. Attended courses on Urban Rifle (Farnam), Ultimate Shotgun (Hoffner), Point Shooting (Chiodo and Lovette), and Bulletproof Mind (Grossman). Coordinated safety for all events. Courses taught: see below.

Patrol Response to Active Shooters in Schools and Public Buildings, NTOA (Exeter Twp. Police Dept., PA, April 2001, L. Glick, Instructor): Certificate.

NRA Police Precision Rifle Instructor Development School. The Crucible, Fredericksburg, VA (2001): certificate of successful completion

2001 IALEFI ATC, Reno, NV: Certificate. Attended courses on Gender-Based Learning Differences (V. Farnam), Simulation Training and Munitions (Klugiewicz). Assistant Safety Coordinator for all events. Courses taught: see below.

Glock Armorer Course (Recertification): Wind Gap, PA (2002): Certificate

GAU/17 7.62mm NATO ("GE Mini-Gun") Training, Patrick Air Force Base, Melbourne, Florida (2002)

GAU/17 7.62 mm NATO Training, Crane Naval Surface Warfare Center, (Crane Air Force Base) Indiana (2002)

2002 IALEFI ATC, San Diego, CA: Certificate. Attended course on Dim-Light Survival Techniques (Ken Good, Instructor). Chief safety coordinator for all events. Course taught: see below.

2003 IALEFI ATC, Orlando,FL: Certificate. Attended courses on Advanced Tactical Rifle Techniques, Shoothouse Instructor Development, Rapid Response to Active Shooters, Vehicle Stop Response Tactics, Stress Analysis Shooting Situations, Mental Conditioning and Mindset (Capt. Joe Robinson), and Blackhawk Down Lecture (Col. Danny McKnight). Attended trade show and hands-on weapons demonstrations.

Price's American Kenpo Karate Center. Leesport, PA. Student in Kenpo Karate (2003-2004)

Threat Analysis Seminar, Reading, PA (2003): Certificate. Instructor Richard L. Ault, Ph.D., Academy Group, Inc., former SA, FBI Behavioral Science Unit

Warrior Arts Seminar (Stick and Knife Fighting). Al McLuckie, Instructor. Leesport, PA (2004).

ATF Dim Light Firearms Training. Los Angeles Police Academy. (2004)

Taser Master Instructor Recertif. Course. Fogelsville, PA (2004). Certificate

2004 IALEFI ATC, Dayton, Ohio. Certificate. Attended classes on Performance Under Stress (Ernest Langdon), Use of Laser Sighting Devices (Hackathorn), Pistol Skills (D. Carroll), and presentation on training principles (CSM Eric Haney). Assisted with Handgun Safety Check. Course taught: see below.

Berks County Sheriff's Department, semi-annual training and qualification sessions with handgun, shotgun and/or patrol rifle (1997-2004)

Disaster Planning: Meridian Bank Fire. ASIS Lehigh Valley Chapter. (2005)

SHOT Show (Las Vegas, 2005). Attended industry trade show.

2005 IALEFI ATC, Reno, Nevada. Certificate. Attended classes on Officer Involved Shooting (Marcus Young); Research on Firearms Ejection Patterns, Reaction Time, Perceptual Distortions Under Stress, and Other Physio-Psychological Gunfight Reactions (Dr. Wm. Lewinsky); The Winning Mind (Brian Willis); Innovative Low-Light Training; Finishing the Fight (Jeff Hall); Use of Force Options & Policy (Jon Blum); Close-Range Point Shooting (Matt Tempkin); Application of Marksmanship; Training at the Speed of Life (Ken Murray). Course taught: see below.

Repetitive Strain Injuries (Somerset, NJ 2005)

Use of Force in Pennsylvania (Philadelphia 2006). 6 CLE credit hrs. Certificate

SHOT Show (Las Vegas, 2006). Attended industry trade show.

2006 IALEFI ATC, West Palm Beach, FL. Certificate. Attended classes on Patrol Rifle, Survival Vision; Handgun Light Instructor, Cops on the 4th Generation Warfare Battleground (DuVernay); Concealed Carry; Managing Use of Force Training (Albert Lee); Mindsighting (Dr. Michael Asken).

Benelli Shotgun Armorer's Course (West Paterson (NJ) Police Department 2006)

BATF Training Classes, "Characteristics of Armed Suspects," "Firearms Identification," and "ATF Firearms Trace Program." Alvernia College (2007)

SHOT Show (Orlando, FL 2007). Attended industry trade show.

Mastering the Defensive Folding Knife. Northeastern Tactical Schools. Michael de Bethencourt, Instructor. (Hellertown, PA 2007) Certificate.

Firearm Retention, Disarming and Recovery. Northeastern Tactical Schools. Michael de Bethencourt, Instructor. (Hellertown, PA 2007) Certificate.

CDT Personal Protection Training. (Reading, PA 2007) Level 1 Certificate.

2007 IALEFI ATC, San Antonio, TX. Certificate. Attended classes on Tactical Anatomy (James Williams, MD), Patrol Rifle (D. Alwes), Close Quarters Handgun Techniques (H. Iverson), Hojutsu-Ryu (J. Hall), Handgun Light Instructor, Virtual Reality Training (Livefire Interactive), Legal Standard – Objective Reasonableness (T. Harper, Esq.).

Seminar, "Police Involved Shootings – When the Smoke Clears." Westchester County Detectives Association (Yorktown Heights, NY 2007). Instructors Michael Baden, MD (Chief Forensic Pathologist, NYSP), Thomas Martin (Sr. Investigator, Forensic Ident.Unit, NYSP), ADA Michael Hughes (Public Integrity Bureau, Westchester DA's Office), Det. Michael Palladino, and Emanuel Kapelsohn (see below). Certificate

SHOT Show (Las Vegas, 2008). Attended industry trade show. Attended seminar on proper firearms retailing procedures to comply with legal and regulatory requirements, and seminar on advances in, testing and selection of OC aerosol devices.

2008 IALEFI ATC, Reno, NV. Certificate. Attended classes on Combat Mindset, Response to Active Shooters (rifle and handgun), One-Shot

Qualifications, Treatment of Medical Emergencies for Firearms Instructors, Mental Preparation. Competed in Memorial Match. Classes taught-see below.

Indiana Pre-Basic Law Enf. Officers Course. 2008. Successfully completed.

Indiana Basic Firearms Course. Greene County Sheriff's Department (2008). Qualified with SIG P229 handgun (expert rating) and Remington 870 shotgun.

Indiana Basic Defensive Tactics Course. Greene County Sheriff's Department (2008). Successfully completed.

Response to Active Shooters. Greene County, IN (2008). Presented by Crane Naval Surface Warfare Center. Successfully completed.

Shooting Scene Reconstruction Course, Eugene (OR) Police Department, 2008. Mike Haag, Instructor. Certificate

2009 Conference, International Law Enforcement Educators & Trainers Association ("ILEETA"), Chicago, IL. Attended courses: New Paradigms in Firearms Training (Conti), Human Factors and Stress in Lethal Confrontations (Darrell Ross, Ph.D., et al.), Active Shooter Update (Alwes), Taser Training Overview/Update, Tracking Down Valid Firearms Training (G. Morrison, Ph.D.), plus trade show and handgun competition. Taught course on use of force policy (see below).

2009 IALEFI ATC, West Palm Beach, FL. Certificate. Attended industry trade show; shot in IALEFI Memorial Match. Attended lectures and classes: Von Maur Shooting; Firearms Training for Active Shooter Response; Law Enforcement Legal Liability; Tactical Response to Lethal Threats (Allen & G. Lee); Teaching Female Shooters; A Collaborative Approach (L. Hamblin, C. Schroeder, et al.); Teaching Female Shooters; Expert Witness Preparation for the Firearms Instructor; Benefits and Risks of Verbalization in Deadly Force Encounters (G. Klugiewicz). Course taught: see below.

Tactical Treatment of Gunshot Wounds. Anthony M. Barrera, M.D. (Lebanon, IN 2009. Certificate.)

Active Shooter Response. Greene County, IN (2009). Presented by personnel from Crane NSWC.

Force Science Certification Course. Milwaukee County Sheriff's Office, Milwaukee, WI. Force Science Institute. Dr. Bill Lewinski, Dr. Anthony Pinizzotto, Dr. Joan Vickers, Dr. Ed Geiselman, Dr. Alexis Artwohl, Dr. Richard Schmidt, Dr. Matthew Sztajnkrycer (2009. Certificate.)

2010 Conference, International Law Enforcement Educators & Trainers Association ("ILEETA"), Chicago, IL. Attended courses: Handgun Retention and Disarm Instructor (certificate); Characteristics of Exceptional Trainers; Critical Combative Concepts; Smart Use of Force; Heroic Cynicism – How to Live Life in the Arena (Van Brocklin); Stress in Law Enforcement (Artwohl); In Pursuit of Personal Excellence (Brian Willis); Warriors, Force and Winning (certificate). Attended law enforcement products trade show.

"The Bulletproof Mind," Lt. Col. Dave Grossman. Boone County Sheriff's Department (2010)

2010 IALEFI Annual Training Conference, San Antonio, TX. Attended law enforcement products trade show. Conducted Handgun Safety Check for 120 first-time attendees. Attended courses: Begged, Borrowed, Stolen; So You're Qualified – Now What?; Off-Duty Weapons (M. Boyle); Excited Delirium; Diagnosing Shooters (A. Stallman). Course taught: see below. Certificate.

Indiana Hunter Education/Hunter Safety Course (2010). Passed, issued card.

Police Defensive Tactics Refresher (2011). Greene County Sheriff's Department
Emergency Vehicle Operations Course (2011). Greene County Sheriff's Dept.
2012 SHOT Show, Las Vegas, NV. Attended trade show, and courses on Low Light Equipment and Techniques (Instructor J. Meyer) and "Train the Trainer, Below 100," (Instructors Dale Stockton, et al.)
Terminal Ballistics & Field Trauma Care, Greene County Sheriff's Dept. (2012)
2012 ILEETA Conference, Chicago, IL. Attended courses: Law Enforcement/Media Relations; Taser Training & Updates; Range Emergencies; Advanced Firearms Training on a Limited Budget; Police Use of Force Training & Preparation (Chudwin); Deadly Force Training Performance & Officer Safety; Designing Stress-Exposure Training; Swarming, Flash Mobs & the OODA Loop; Verbal Defense & Influence ("Verbal Judo") (Klugiewicz); Street-Level Counter-Terrorism; Use of Force Accountability (Brave); Positive Relations – Law Enforcement & Armed Citizens; Deadly Force Panel of Experts (panelist). Also attended industry trade show.
2012 IALEFI Annual Training Conference, Nashville, TN. Attended courses: Arrest and Control Tactics (Beckley); Simple Martial Art for Self-Defense (Albert Lee); Patrol Rifle Basics; Sports Physiology Approach to Firearms Training; Filling the Tank; Warriors & Leaders; Great American Gunfights. Instructed: Firearms Instructor as Expert Witness. Also, attended industry trade show and hands-on firearms demonstrations.
2013 IALEFI Annual Training Conference, Mobile, AL. Attended courses: Confined Space Engagement (Farren); Vision-Based Shooting (Stimmell). Also attended industry trade show. Courses taught: see below.
Glock Armorer's Course, Old Bridge, NJ (2013).
Knife Defense/Knife Fighting Seminar, Hank Hayes, Instructor. No Lie Blades. Allentown, PA (2013) (class audited only, due to injury)
2014 SHOT Show, Las Vegas, NV. Attended industry trade show.
2014 ILEETA Conference, Lombard, IL. Attended courses: Shots Fired, Suspect Down (John Bostain); Critical Combative Concepts (Charles Humes); Force Related Policies & Issues (Mike Brave); Critical Look at Firearms Qualifications (David McGaha); Police Use of Force Tactics and Law (Chudwin); Gunman in the Lobby, Officer Down (Joe Ferreira); Verbalization Skills (Klugiewicz); Path to Self-Discovery (Bob Lindsey); Street Officer Medical Tactics (Eric Dickinson); Embrace the Suck- Winning Strategies For Trainers (Brian Willis); "Heroes Behind the Badge"; Deadly Force Expert Panel (Ayoob, et al.); Choose Your Words Wisely (Joanne Ryan and Thomas McGreal); Coaching Mental Toughness (Quinn Cunningham); Sharpening the Winning Edge (Brian McKenna); Interactive Firearms Training (Lt. Dan Marcou). Course taught: See below.
2014 IALEFI Annual Training Conference, Amarillo, TX. Attended courses: Surviving the First Three Seconds (Tpr. Hensley); Extended Range Off-Duty Handgun Operation (Michael Johnson); Vision-Based Shooting (Jim Stimmell); Identifying the Limits of Firefight Performance; Threat Pattern Recognition Firearms Training System (Bruce Siddle, Human Factor Research Group) Classes Taught: see below.
NRA Personal Protection Outside the Home (2014): certificate
2015 SHOT Show, Las Vegas, NV. Attended industry trade show.
Glock factory tour and armorer-trainer update. Smyrna, GA (2015)

Winning Mind Seminar, Dave Smith, Instr. ,PA State Police Academy (2015)
2015 ILEETA Conference, Wheeling, IL. Attended courses: Deadly Force Panel of Experts (panelist, see below); Creating Training Miracles; Understanding Response Time in Law Enforcement; Emergency Preparedness for Law Enforcement Families; Ambush – Preparing Officers for the #1 Killer; Defensive Knife (Halleck); Down to Zero – Unintentional Discharges in Law Enforcement; Becoming Knights – Teaching Warrior Mindset; Mistake of Fact Shootings (Santos); Use of Force Report Writing; Active Shooter Panel Discussion (panelist, see below); Use of Force and Liability; Blended Learning; Lifesaving Made Easy; Think Like a Soldier, Act Like a Cop
2015 IALEFI Annual Training Conference, West Palm Beach, FL. Attended courses: Lecture on Leadership (Col. Danny McKnight); Current Issues for Firearms Instructors (Alwes); Developing Courses of Fire (Marrs); Contaminated Combat (Liske, audited only); Reflex Sights (Martello); Close Quarter Transitions (Jeff Prather).
Gun Law Seminar, U.S. Law Shield, Allentown, PA (2015)
Tavor Level 1 Armorer's Course, including 9mm Conversion and Right/Left Hand Conversion. Harrisburg Area Community College. Certificate (2015).
FN15 Armorer Course, Berks County Prison, Leesport, PA (2015). Certificate.
IALEFI Regional Training Conference, Freeport Police Range, Long Island, NY (2015). Certificate. Attended classes on Use of Force (Chief James Garside), Lateral Vascular Neck Restraint (Thomas Graham); and Master Pistol Instructor Skill Builder Class (Steve Gilcreast, Sig Sauer Academy).. Class taught: see below.
2016 ILEETA Conference, Rosemont, IL. Attended courses: Deadly Force Panel of Experts (panelist, see below); Active Shooter Panel Discussion; Use of Force Panel Discussion; How to Survive and Win In An Ambush (Shaykhet); Lights, Sights & Lasers (Wes Doss); Patrol Rifle (John Farnam); Responding to the Officer-Involved Shooting (Burke, IMPD); Human Factors in Training and Performance (John Bennett); Video Evidence (NV DPS); Guardians are Warriors (Mahoney); Body Searches (Cpl. Julie Johnson); Black Lives Matter (Ron Martinelli); Lessons From the Great Law Dogs in History (Lt. Dan Marcou).
Video Evidence Class, Force Science Institute, Chicago, IL (2016, Certificate)
2016 IALEFI Annual Training Conference, Mobile, AL. Attended Courses: Surviving the First Three Seconds (Tpr. Robert Robertson, NC Highway Patrol); Active Shooter Training in the Shoothouse (Alwes); Handgun Snatching (Albert Lee/Wilkie); ALERT Training - Civilian Response to Active Shooter Events (Instructor Certificate). Course taught: see below.
Hojutsu-Ryu Class, Phillipsburg NJ and Easton PA, taught by Soke Jeff Hall. Awarded brown belt (2016).
Colt .45/Model "O" (1911) Armorer Class, Colt's Manufacturing Company, Ohio Peace Officers Training Academy, London, Ohio (2016). Certificate
2017 SHOT Show, Las Vegas, NV. Attended industry trade show.
Improving Tactical Performance by Enhancing Vision, SHOT Show Law Enforcement Education Program, Dr. Alan Reichow (2017)
Rangemaster Tactical Conference, Little Rock, AR (2017). Attended classes: Between a Harsh Word and a Gun (OC, Chuck Haggard); Church Security (Moses); Police-Citizen Contacts (Weems); Gun Accidents (J. Farnam); Just

Enough Jitsu (Cecil Burch); Defining the Threat (T. Givens); Law of Self-Defense (A. Branca); The Firearms Instructor as Expert Witness (Ayoob/Hayes); Street Encounter Skills (Murphy).

2017 ILEETA Conference, St. Louis, MO. Attended courses: Deadly Force Panel of Experts (panelist, see below); Patrol Rifle Panel (panelist, see below); Tactical Duty Knife (Fletch Fuller); Six Myths of Motor Learning & How This Affects Your Training (Robert Bragg); Proxemics-Based Curriculum Development (Marie D'Amico); Facilitated After-Action Reviews (Joseph Willis): Camera-Friendly Compliance & Control Techniques That Work (Hetrick): "After Force Experience Beyond the Incident (Patrick Shaver); Pre-Indicators of An Assault (Mark Sawa).

2017 IALEFI Annual Training Conference, West Palm Beach, FL. Attended courses: The Pulse Nightclub Shooting; In-Extremis Advanced Tactical Handgun (Wes Dobbs); Police Shotgun (Mike Johnson); Officer Survival Mindset (Alex and Daniel Cobb); Bulletproof Mind (Lt. Col. Dave Grossman). Also attended industry trade show and hands-on product demonstrations.

2018 SHOT Show, Las Vegas, NV. Attended industry trade show, including Industry Day at the Range.

2018 ILEETA Annual Conference, St. Louis, MO. Attended trade show, and courses: Active Shooter Panel (panelist); Deadly Force Expert Panel (panelist); A Nearly Fatal Range Shooting (DuVernay); Recognizing & Responding to Mental Illness; Terminal Ballistics (Ed Santos); Threat Pattern Recognition (Joe Ferrera).

2018 IALEFI Annual Training Conference, Houston, TX. Attended trade show, and courses: Aurora, Colorado Theater Shooting; Basic Patrol Rifle Fundamentals (Pickering and French); Low Light Operations (J. Meyer); IADLEST National Certification Program; Reactive v. Precision Shooting (T. Fletcher); Officer Survival Mindset (Cobb); Dallas Sniper Incident & Mexican Drug Cartels (ATF).

FASTER Course, Rittman, OH. Chris Cerino & Andrew Blubaugh, Instrs. (2018)

Rangemaster Firearms Instructor Development & Certification Course, Xenia, Ohio, Tom Givens, Chief Instructor (2018)

Force Science Advanced Specialist Course, Force Science Institute, April-August 2018. Course syllabus included required reading in three textbooks (on human movement, physical training and performance and reaction time; vision; and human error) and dozens of scholarly articles and research papers, lectures by several noted authors, doctors, scientists and professors; multiple oral and written presentations; teleconference and in-person classes; and formal written work, comprising in total several hundred hours of coursework at the graduate school level.

2019 SHOT Show, Las Vegas, NV. Attended industry trade show, including Industry Day at the Range.

"Police Misconduct" Continuing Legal Education Program (2/11/2019).

2019 NRA Convention, Indianapolis, IN. Attended industry trade show.

2019 IALEFI Annual Training Conference, West Palm Beach, FL: Attended classes and presentations by Dr. William Lewinski ("Force Science Update"), Don Alwes ("Active Shooter Response For Firearms Instructors"); Don Smith ("Sniper Overwatch"); LouAnn Hamblin ("Active Shooter Handgun Training"). Also attended industry trade show, helped conduct Handgun Safety Check, and

helped conduct Memorial Match. Class taught: see below.
"Preparing for an Armed Intruder," Eastern University, St. Davids, PA (2019)
American Heart Association "Heartsaver First Aid CPR AED" Training Certification 12/8/2019
2020 SHOT Show, Las Vegas, NV. Attended industry trade show.
Active Shooter Response, Trexlertown, PA, March 2020. Thanos Milios, Lead Instructor. Classroom and reality-based training scenarios using Simunitions guns with role-players.
"Safely Engaging Psychopaths & Sociopaths," Public Agency Training Council Webinar, April 2020.
"Police Response to Armed Suicidal Subjects," Dr. Andrew T. Young, Instructor, Public Agency Training Council - Webinar, June 23, 2020
Defensive Handgun 1, 2, 3 & 4, Marksmanship Matters (Larry Mudgett Instructor), Lehi, Utah, July 2020
Defensive Handgun and Patrol Rifle, Defense Training International, John Farnam, Instructor. Sussex, NJ, October 2020.
Certificate, DTI Urban Rifle. Certificate, DTI Instructor Update. (Assisted in instructing, see below.)
UTM Professional Training Organization ("PTO") Certification Class. Certificate (2020)
Glock Armorer's Course – Update and Recertification (Smyrna, GA 2020)
IALEFI Virtual Training Conference, January 2021.
Metal-Tec Metal Detector Instructor Course. Certification 2021.
Principles of De-Escalation, Pennsylvania State Police (Sgt. Timothy Fetzer, Jan. 2021)
Realistic De-Escalation Instructor Course, Force Science Institute, Maplewood, Minnesota. IADLEST-Certified Course, Certificate (2021)
"Officer-Involved Shootings: The Aftermath" ("I've Been In An Officer Involved Shooting – Now What?" Instructor Laura Scarry, Esq. Webinar 2021 (Certificate)
Stop the Bleed Training, St. Luke's Hospital, Easton, PA 2021 (Certificate)
ILEETA Annual Training Conference, St. Louis, MO (2021). The Neuroscience of De-Escalation (Verplanck and Smarro, Instructors); Tactical Disadvantages (Green); Risk Assessment (Horine); Small Unit Tactics for Active Shooter Response (Scott Hyderkamp); Sharpening Your Agency's Knife Program (Zane Nickell); Surviving the Officer-Involved Shooting (Brian Gonzales); Robert Peel's Principles (Casavant); How to Use Personality Science to Enhance Training (Kerry Mensior); What Excited Delirium is Not (Ellis Amdur); Simulator Scenarios: Virtra, Milo, Ti Systems; Active Shooter Panel of Experts (panelist and attendee); Deadly Force Panel of Experts (panelist and attendee). Courses taught: see below.
Defensive Cane Course ("Introduction to Cane-Fu"), Powhatan, Virginia, Tom Ashmore, Instructor. 2021 (Certificate)
IALEFI Annual Training Conference, Melbourne, FL. 2021 (Certificate)
"Legal Issues in Use of Force," LLRMI (Legal & Liability Risk Management Institute). Instructor: Jack Ryan, Esq. (2022)
IALEFI Annual Training Conference, Las Vegas, NV. 2022 (Certificate) Attended classes on the Mandalay Bay Shooting (LVMPD); Single Officer Vehicle Tactics (LVMPD); Unconventional Rifle Fighting Positions; FACES

of Concealed Carry; NRA LE's Creating a Red Dot Transition Program for Your Agency; Special Purpose Rifle Program (LVMPD); Gunshot Wound Trauma Care; Human Factors & Firearms Instructors (Sgt. Jamie Borden).

NRA Annual Conference, Houston, TX (2022). Attended industry trade show. Attended seminars: Training for Concealed Carry: Focusing on Developing Essential Skills (Jeff Gonzales); Evidence-Based Defensive Firearms Training: A Discussion for Instructors and Those Who Actually Train (John Correia).

Instructor Update, DTI Urban Rifle, Sussex, NJ (John Farnam, Instructor (2022)

SHOT Show, Las Vegas, NV (2023): Attended firearms/law enforcement industry trade show.

NRA Convention, Indianapolis, IN (2023). Attended firearms trade show; attended classes on Bulletproof Mind (Lt. Col. Dave Grossman); Myths of Concealed Carry (John Correia).

IALEFI Annual Training Conference, Houston, TX (2023). Attended classes on the Uvalde School Shooting (ALERRT); Red Dot Pistol Optic Instructor Training.

PROFESSIONAL ASSOCIATIONS & MEMBERSHIPS:

American Bar Association (Member 1978-1997)
Association of the Bar of the City of New York (Member 1978-1998)
Pennsylvania Bar Association (Member 1994-2007, 2012-present)
Bar Association of Lehigh County (Member 1994-2007, 2012-present)
Pennsylvania Trial Lawyers Association (Member through 2004)
Association of Trial Lawyers of America (Member through 2004)
American Inns of Court (Member 2000-2007)
Barristers Inn, Allentown, PA (2012-present)
Muhlenberg College Board of Associates
National Rifle Association (Endowment Member)
International Association of Chiefs of Police (Associate Member 1985-1992)
International Association of Law Enforcement Firearms Instructors (see above)
Police Marksman Association (Member, Nat'l Advisory Board 1987-2004)
American Society for Industrial Security (Member)
Tactical Response Association (former Charter Member)
Justice System Training Association (former Member)
American Society of Law Enforcement Trainers (former Charter Member)
Outdoor Writers Association of America (Member 1987-1990)
U.S. Practical Shooting Association (former Member)
U.S. Revolver Association (Member 1983-1989)
Pennsylvania Chiefs of Police Association (former Associate Member)
Pennsylvania Sheriff's Association (former Associate Member)
Appointed Senior Research Associate, Carnegie Mellon University Center for the Advancement of Applied Ethics (1994)
Appointed to Advisory Board, AWARE (1995)
Appointed as Fellow, Defensive Handgun Training Institute (1996)
Appointed to Pennsylvania Municipal Police Officers Education and Training

Commission Committee to develop standards and curriculum for decision-making training simulator/judgmental use of force mandatory in-service training program (1997-98); Curriculum Development Committee for revision of Act 120 Police Academy curriculum used statewide; patrol rifle training standards (2004-); revision of Act 120 Police Academy lesson plans, training videos, and related materials used at all police academies in PA (2015); and development of Mandatory In-Service Training Program on "Use of Force" (2015 development for 2016 presentation statewide) .

National Tactical Officers Association (former and current Member)
Associate Member, Fraternal Order of Police (Linton, Indiana Chapter 2008-12)
Member, International Law Enforcement Educators and Trainers Association (2009 -)
Member, Advisory Board, Armed Citizens Legal Defense Network (2012 -)
Member, Leadership Group, Safe Team, Faith Church, Trexlertown, PA (2017-)
Member, Security Committee, Temple Beth El, Allentown, PA (2019-)

SELECTED MEDIA REFERENCES AND ACKNOWLEDGMENTS:

EMANUEL KAPELSOHN interviewed, mentioned and pictured in THE GUN DIGEST BOOK OF COMBAT HANDGUNNERY by J. Lewis and J. Mitchell (Northfield, IL 1983). Quote from p. 117:"His research and personal experience in self-defense firearms training make [Kapelsohn] one of the most qualified people in the business."

EMANUEL KAPELSOHN interviewed on subject of firearms self-defense on ABC Television show "What's Up, America?" (1980 and re-run)

"Midland Park Hires Weapons Specialist," The Sunday News (Ridgewood, NJ. March 1984)

"Firearms Trainer to be Hired," Suburban News (Wayne NJ. March 21, 1984)

"Midland Park Will Hire Firearms Pro for 9mm Courses," The Northwest News (Midland Park, NJ. March 22, 1984)

"Gun Expert Rated High," The Sunday News (Ridgewood NJ. April 8, 1984)

"Crime Rise Has Women Taking Up Arms," The Times (Trenton NJ. March 10, 1985)

"Union Launches Training Program to Upgrade Skills for Police," The Star-Ledger (Newark, NJ. November 20, 1985)

Guest Instructor Appreciation Award, International Police Academy, Master Instructor Seminar (1985)

"Gun Law Won't Stop Terrorists," The Times (Trenton, NJ. May 20, 1986)

"Expert Hits Police Training," The Lawrence Ledger (Lawrenceville, NJ. October 24, 1986)

"Lawrence Resident's Love of Firearms Becomes Career," The Star-Ledger (Newark, NJ. December 12, 1986)

"Committee Takes Aim at Detector-Proof Guns," The Star-Ledger (Newark, NJ. December 12, 1986)

"Gun Lobbyists Oppose Passage of Bill to Ban Non-Metal Guns," The Times (Trenton, NJ. December 12, 1986)

"Plastic Gun Bill Demolished by Expert's Testimony," NRA Monitor (Washington, D.C. Vol. 14, No. 1 January 15, 1987)

"Detection Systems, Not Guns Should Be Focus of Legislation, Says Firearms Expert," NRA Monitor (Washington, D.C. Vol. 14, No. 3 February 15, 1987)

"Using Training Consultants" by Bill Clede, Law and Order (March 1987)

"Taking Humanistic Approach to Firearms," Newsday (New York, NY. July 20, 1987)

"New Yorkers Learn to Protect Themselves at Gun School," The New York Times (New York, NY. July 20, 1987)

"Citizens Learn to Shoot in Face of Crime," The Sun (Melbourne, Australia. August 1, 1987)

"New York's Itchy Trigger Finger," The Advertiser (South Australia. July 31, 1987)

"Bill Banning Plastic Guns Debated," (Associated Press AAA wire release under this or similar title, July 28, 1988, describing Emanuel Kapelsohn's Senate Judiciary Committee subcommittee testimony, printed on July 29 in hundreds of U.S. newspapers, including the following:

Alexandria, LA Daily Town Talk
New Haven, CT Register (continued, next page)
Dayton, OH News/Journal Herald
Wilmington, NC Star
Cheyenne, WY Eagle
Delaware, OH Gazette
August, GA Herald
Bennington, VT Banner
Johnstown, PA Tribune-Democrat
Erie, PA News
Lynchburg, VA News and Daily Advance
Bluefield, WV Telegraph

Mattoon, IL Journal-Gazette
Casper, WY Morning Star Tribune
Belleville, IL News-Democrat
Newark, OH Advocate
Anchorage, AK News
Kenton, OH Times
Canton, OH Repositor
Waterbury, CT American
East Liverpool, OH Review
FT. Walton Beach, FL Playground News
Vero Beach, FL Press-Journal
Modesto, CA Bee
Vallejo, CA Times-Herald
Newport News, VA Times-Herald
Marysville, OH Journal-Tribune
Paducah, KY Sun
Toms River, NJ Observer
Springfield, OH News-Sun
Logan, OH News
Piqua, OH Call
Lawton, OK Press
San Diego, CA Union

"Witness Upstages Metzenbaum at Hearings," Gun Week (Buffalo, New York. August 14, 1987)

"Neal Knox Report: Gun Bills Moving," Shotgun News (Hastings, NE. September 1, 1987)

"Kapelsohn Gets September Gun Rights Defender Award," Point Blank (Bellevue, WA September 1987)

"Firearms Expert Wins Person of the Month," NRAction (Washington, D.C. September 1987)

Selecting the Police Pistol by Doug Wicklund, The American Rifleman (December 1987)

Mesa, Arizona: The IALEFI Convention by Tony Lesce, Arizona Police Officer (Phoenix, AZ Winter 1988)

International Association of Law Enforcement Firearms Instructors Seventh Annual National Training Conference by Chris Pollack, Special Weapons and Tactics (March 1988)

Modern Techniques of Defensive Pistolcraft: An Exceptional Handgun Course Taught by John Farnam and Emanuel Kapelsohn by Barrie Bergman, Practical Shooting International (Emmetsburg, IA. March 1988)

"Hughes Goes Private With Hearing Witness," Gun Week (Buffalo, NY. January 8, 1988)

" 'Plastic Gun' Ban Brewing," NRAction (Washington, D.C. January 1988)

Gaping Holes in Airport Security by Peter Cary, U.S. News & World Report (April 1988). Quote from page 28:

> "Emanuel Kapelsohn, a police weapons expert, astonished a congressional subcommittee by demonstrating how guns could be smuggled through certain metal detectors . . ."

Police Defensive Handgun Use and Encounter Tactics by Brian A. Felter (Prentice-Hall, Inc. Englewood Cliffs, NJ 1988). Quote from p. 6:

> "In defensive firearms training today, the information and defensive instructors exist -- five of the most talented being Massad Ayoob, Ray Chapman, John Farnam, Emanuel Kapelsohn, and Chuck Taylor -- and from a resource pool of defensive information that the law enforcement community must make use of."

"U.S. Firearms Consultant Due Next Week," Trinidad Guardian (Port of Spain, Trinidad. July 16, 1988)

Shooting Schools: A Second Look by James L. Winter (Albany, New York 1985). Quote from page 92: "API's staff includes such nationally famous personalities as . . . writer Manny Kapelsohn."

An Overview of the Police Marksman National Advisory Board by Brian McKenna. The Police Marksman (September/October 1988). Professional biography of Emanuel Kapelsohn

"Semiautomatics or 6-shooters?" by Ken Valenti. Gannett Westchester Newspapers. (Westchester County, N.Y. January 15, 1989)

"Gun Control Opponents Lock Horns With Graves" by Donna Leusner (The Star Ledger, February 7, 1989)

Interviewed on "Geraldo" (Geraldo Rivera Show) NBC television, March 6, 1989, on subject of gun availability and gun control.

Seek Out the Expert by Joseph J. Truncale, Ph.D., The ASLET Journal (January/February 1989). Quote from p. 12:

> "If you wish to know more about guns and shooting, talk to those who are recognized experts in this area. Massad Ayoob, Ray Chapman, John Farnam, Emanuel Kapelsohn, Dennis Tueller, along with many others, can guide you to schools and programs which are well known for their professionalism."

Glock by Sgt. Paul Palank. Blue Line Police Magazine (March/April 1989). Quote from p. 24:

> "The success that we in Miami have had with the Glock pistol is due not only to the advanced design of the weapon, but the "state of the art" instruction provided by Glock Incorporated in the forms of Emanuel Kapelsohn (Peregrine Corporation) and Peter Tarley (Rockwell Corporation). The training provided by these gentlemen to the transitional training instructors superbly mated the Glock's ingenious technology with their equally progressive training program."

Glock Continues To Be An Innovator by E.B. Hulsey, Police Marksman (March/April 1990). Quote from p. 58:

> "The instructor . . . was Emanuel Kapelsohn, who made the class a very interesting learning experience. Mr. Kapelsohn is an example of the quality instructors which Glock has retained to teach these courses."

Glock Pistol: Perspective From The Field by Massad Ayoob. Guns (September 1990). Quote from p. 77:

> "The best money you can spend on your Glock is for training. The firm retains Manny Kapelsohn, Peter Tarley, and Cathy and Jerry Lane for their police transition and armorer's instruction programs . . . These are among the finest combat handgun trainers in America; Glock chose them well. I . . . believe that the superb training of these four master instructors has been more responsible for the Glock's success in the field and in sales than most people realize."

Emanuel Kapelsohn and Peregrine Corporation cited, quoted and acknowledged in "Semi-Automatic Pistol Manual Safety Restrictions," U.S. Border (continued) Patrol Academy, Glynco, GA, presented at U.S. Marshal's Service Semi-Automatic - Revolver Handgun Symposium, Feb. 21-22, 1990. (Emanuel Kapelsohn described as an "expert trainer" on p. 16.)

"Fearing Drug Wars, Suburban Police Swap 6-Shooters for Semiautomatics" by B.J. Phillips. Philadelphia Inquirer (September 9, 1990)

Interviewed in "Entrevistas" column of Magnum. May-June 1991 (Caracas, Venezuela)

Peregrine Corporation training materials cited in published lesson plans of Federal Law Enforcement Training Center (Glynco, GA) on semi-automatic pistol training, clearing of pistol malfunctions, etc.

Emanuel Kapelsohn mentioned and quoted in study by Federal Law Enforcement Training Center on instructor: student ratios for firearms training (V. Atkins. Glynco, GA 1991)

Emanuel Kapelsohn and Peregrine cited as offering 'a strong major in "how" and a strong minor in "when" [to shoot] in "Deadly Force - When Is It Justified?" by Massad Ayoob, Guns & Ammo's Handguns for Home Defense, Vol. 9, No. 5 (1991)

"The Police Marksman Advisory Board" by Guy A. Rossi, Police Marksman (Jan./Feb. 1992). "Innovator, tactician, expert . . . [Emanuel Kapelsohn is] considered one of the country's leading authorities on semi-automatic, long gun and submachine gun training . . ."

"IALEFI'S ATC" by Chris Pollack, SWAT (May 1993)

Appreciation Award, Calgary Police Service Tactical Unit (1993)

Appreciation Award, International Association of Law Enforcement Firearms Instructors ("for your dedication, time and personal effort towards the development of the Firearms Training Standards") (1993)

"Newsclippings," The Firearms Instructor, Issue 13 (1994)

"Shotgun Key In Acquittal of Garron," Atlantic City Press, Nov. 13, 1994. Quote:

> "They found the weapon's safety device could disengage if it was merely brushed -- just as Emanuel Kapelsohn, the defense firearms expert, had testified, the jurors said."

Glock, The New Wave in Combat Handguns by Peter Kasler (Boulder, CO 1992), page 296.

Acknowledged in Stealth (1989) and Extreme Prejudice (1991) by Guy Durham (Putnam, New York)

Acknowledged in The Street Smart Gun Book by John Farnam (Police Bookshelf, 1986)

Acknowledged in Handgun Stopping Power, The Definitive Study by Evan Marshall and Ed Sanow (Paladin Press, Boulder 1992)

Acknowledged in The Farnam Method of Defensive Handgunning by John S. Farnam (Seattle 1994): "These are the ones who have advanced the art and prepared it to be passed to the next generation: Manny Kapelsohn . . ."

"Modern Training, The Professional's Edge" by Michael J. Scanlan, Protection News, Vol. 11, No. 2 (Fall 1995), Internat'l Foundation of Protection Officers, Bellingham, WA. Quote: "Manny Kapelsohn's obvious enthusiasm along with his vast knowledge of the subject

matter and genuine interest in imparting that knowledge to us, stimulated our interests, motivated us to excel and created a learning environment for the entire class."

"Post-Training Dry Drills" by Det. Bill Kaiser, The Firearms Instructor, Vol. 17 (1995)

"IALEFI 1995 Training Conference" by C. Pollack, The Firearms Instructor, Vol. 17 (1995)

"Gun Control and Economic Discrimination: The Melting Point Case-In-Point" by Markus Funk, 85 Journal of Criminal Law & Criminology 764-806 (Northwestern U. School of Law, 1995): Emanuel Kapelsohn cited repeatedly throughout article.

"IALEFI '95 Annual Training Conference" by C. Pollack, SWAT (June 1996)

"Search for qualified firearms instructor didn't last very long," Reading Eagle, April 20, 1997, p. B1

"Sheriff, deputies begin targeting weapons training," Reading Eagle, April 20, 1997, p. B1

"Professional Firearms Instruction for the Protective Specialist" by Mike Scanlan, Executive OPS International (Dec. 1997). Quote: " . . . I contacted Manny Kapelsohn, the world class firearms instructor and IALEFI Vice President."

Item in Business "Players," Allentown Morning Call, January 4, 1999. Quote: "Emanuel Kapelsohn of Bowers has been re-elected as Third Vice President of the International Association of Law Enforcement Firearms Instructors."

"Kapelsohn is Re-Elected by Police Association," Allentown Morning Call, December 30, 1999.

"Degree of Guilt Decided for Smith," The Inquirer, Philadelphia, July 30, 1998, p. B1

Appreciation Award from Pennsylvania Municipal Police Officers' Education & Training Commission, for "outstanding contribution" toward the development, from 1997-1999, of the Commission's new Use of Force - Judgmental Training Program.

"Police Shooting Headed to Jury," New Haven Register, March 9, 2000. Quote: "Standing before a rapt jury, Kapelsohn demonstrated a number of stabbing and slashing techniques with the small knife, narrating as he did so."

Emanuel Kapelsohn and The Peregrine Corporation cited and acknowledged numerous times in Commonwealth of Pennsylvania firearms training curriculum for Basic Police Academy Course taught at police academies throughout the state (2000).

"MPOETC Conducts Firearms Instructor Training Seminar," Pennsylvania MPOETC Newsletter, Vol. 23, Issue 2, Sept. 2000. Quote: "The lead instructor for the seminar was Emanuel Kapelsohn, a nationally recognized firearms instructor and use of force expert."

"Experts Claim Wife Grabbed Accused's Gun," by William Doolittle, Pocono Record, November 28, 2000. "…Emanuel Kapelsohn, an Allentown attorney and firearms expert, argued that a crescent of black residue pictured on the back of Rhonda Kammer's hand was caused by discharge from the cylinder gap of the .38 caliber revolver used in the killing. … Kapelsohn said pictures of the woman's hand showed marks on her hand that "could not have been produced by the muzzle blast."

Cited by Lt. Col. David Grossman as "an awesome warrior-trainer-lawyer" in publication of his national e-mail network on subject of involuntary muscular contraction (2002).

Recipient, City of Allentown Proclamation (commendation) for participation on Advisory Board of University of Pennsylvania (FICAP/MPAP) study on reducing gunshot injuries and deaths (2002)

"New Trial Ordered for Officer Convicted in a Suspect's Death," The New York Times, October 18, 2002.

"Pa. Court Rejects Appeal by Ex-Teacher," by William Doolittle, Pocono Record, December 14, 2002. "During the trial, Emanuel Kapelsohn testified as a crime scene and firearms expert. The Superior Court said, "The record contains abundant evidence from which the trial court could conclude that Kapelsohn had reasonable pretension to specialized knowledge about reconstruction of the scene of a crime involving a firearm."

Commonwealth of Pennsylvania v. Youngken, 2002 WL 32351935, Pennsylvania Superior Court, December 5, 2002: "Clearly the qualifications of Mr. Kapelsohn indicate that the trial court did not abuse its discretion in qualifying him as an expert witness in firearms and crime scene reconstruction involving firearms."

Teaching Women to Shoot by V. Farnam and D. Nicholl (Copyright 2002, Boulder, CO). Emanuel Kapelsohn quoted and cited extensively on pages 46-47 on subjects of trigger finger placement, covering suspects at gunpoint, and accidental discharges of firearms.

Acknowledgement in Training at the Speed of Life: The Definitive Textbook for

Military and Law Enforcement Reality Based Training, by Kenneth R. Murray (2004): "Special Thanks to my Technical Editor, Emanuel Kapelsohn: Scholar, Trainer, and Friend. Thank you for your patience, fine eye, tireless effort, boundless knowledge, and dedication to detail."

"Sharpton: Monroe Shooting an 'outrage,'" Allentown Morning Call, April 22, 2004.

"Independent Investigator Looking Into Fatal Shooting," Pocono Record, April 23, 2004.

"Shooting scrutinized by victim's family," Pocono Record, April 23, 2004. Quote: "Monroe County District Attorney David Christine has also appointed Emanuel Kapelsohn, an Allentown attorney and weapons expert, to conduct an Independent investigation into the shooting."

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(Paulden, AZ 1980-1982): staff instructor.

Firearms Safety, Basic Handgun and Defensive Handgun courses, U.S. Treasury Department Pistol Club, New York, NY (1980-1983).

Defensive Handgun Training, The Spiesman Agency, New York, NY (1980-83): provided handgun training for detective agency.

Defensive Handgun Training and Qualification, Danbee Investigations (New Jersey 1983): provided handgun training for detective agency personnel.

Officer Survival Instructor Course. Massachusetts Criminal Justice Training Council. (1984): taught the firearms portion of this instructor-level course.

Close-Range Handgun Techniques: Sampson Technical College, Clinton, NC (1984). Taught this defensive handgun class.

Borough of Midland Park Police Department (NJ 1985): conducted semi-automatic pistol transitional training for this department.

Union County (New Jersey) Prosecutor's's Office (Senior Firearms Instructor Course. 1985): co-instructed three separate week-long courses for firearms instructors from every police department in Union County under contract with Rockwood Corporation, Police Training Division.

International Police Academy - Master Instructors Seminar (Morell, Desmedt, et al.): guest instructor (Toms River, NJ 1986)

Connecticut State Police Academy. (Senior Firearms Instructor Course. Meriden, CT, 1986 and 1988): guest instructor under contract with Rockwood Corporation, Police Training Division.

NRA Law Enforcement Firearms Instructor School (U.S. Marine Base, Quantico, VA 1986): instructor.

Hilltown Township Police Department (PA 1986): conducted semi-automatic pistol transitional training for this department.

Glock Familiarization Course, Middlesex County, NJ 1987: taught a one-day familiarization course for police firearms instructors from multiple agencies.

1987 Glock International Training Symposium. (Kansas City, Kansas): headed a team of four instructors in conducting this training conference for some 70 participants.

Police Counter-Sniper Rifle Course. (Fort Dix, New Jersey 1987): co-instructed this course for police and military counter-snipers.

Borough of Ramsey Police Department (NJ 1987): conducted semi-automatic pistol transitional training program for this department.

International Association of Law Enforcement Firearms Instructors (IALEFI), National Training Conferences (see above): conducted instructor-level programs on Drawing the Handgun and Close-Range Shooting Techniques (Philadelphia 1985); Dim Light Shooting Techniques, and Combat Shotgun Characteristics (Orlando, FL 1986); Tactical Use of Cover (Mesa, Arizona 1987); Dim-Light Assault Rifle and Shotgun Techniques, and Semi-Automatic Pistol Transitional Training (St. Augustine, FL 1988); Dim-Light Shotgun and Rifle Techniques (Salt Lake City 1989); Concealed Carry Handgun, Auto-Pistol Transitional Training, Dim-Light Handgun and Shotgun, and Police Handgun Caliber Selection and Effectiveness (panel) (Washington, D.C. 1990); Firearms Safety; Involuntary Muscular Contraction and Unintentional Discharge (co-instructed with Dr. Roger Enoka) (Mesa, AZ 1991); Developing Dynamic Training Exercises for the Patrol Officer (co-instructed with Peter Tarley) (Tampa, FL 1992); Development of Dynamic Training Exercises for Patrol Officers (co-instructed with Peter Tarley) (Reno, NV 1993); Dynamics of a Gunfight (Orlando, FL 1994); Training Handgun Skills (Amarillo, TX '95).

Basic and Advanced Defensive Handgun Courses (1982-1993): co-instructed (with John Farnam) courses in locations including Fort Mead (MD), Norristown (PA), Ledgewood (NJ), Berkeley Township (NJ), Princeton Junction (NJ), Pipersville (PA), Dutchess County (NY), New York City (NY), Salt Lake City (UT), Bradford (RI), Elroy (WI), East Stroudsburg (PA), and Atlantic City (NJ).

New Jersey Armored Motor Carriers Association (1987): guest speaker on subject of firearms training for the armored car industry.

Defensive Shotgun Course (East Stroudsburg, PA 1987).

Armored Motor Service Corp. (Trenton, NJ 1985-88): conducted handgun training and qualification.

Princeton Armored Service (Trenton, NJ 1986-1990): conducted handgun training and qualification.

Eastern Armored Service (Trenton, NJ 1991-1997): conducted handgun training and qualification.

Berkleigh Career School (East Brunswick, NJ 1988-1989): conducted firearms training program for security officer trainees.

NRA Law Enforcement Semi-Automatic Pistol Seminars. Helped to design, and served as chief instructor for these courses taught at U.S. Marine Base, Quantico, VA (1987); Florida Law Enforcement Training Center at Lively (1988); Oklahoma City Police Academy (1988); Port Huron, Michigan (1988); and Alamo Area Law Enforcement Academy, San Antonio, TX (1988).

Miami (FL) Police Department (Firearms Instructor Course, 1987): trained MPD firearms instructors as part of this agency's transition from revolver to semi-automatic.

New Jersey Department of Environmental Protection, Bureau of Law Enforcement (Firearms Instructor Workshop, 1987): trained NJDEP instructors for this agency's transition from revolver to semi-automatic.

National Armored Car Association (Annual Meeting. New York, NY 1987): guest speaker on subject of current trends in firearms training and training-related liability.

Atlantic City Police Academy. (Police Handgun Instructor Workshop, 1987. Police Shotgun Instructor Workshop, 1987. Police Special Weapons Course, 1987. Glock 17 Familiarization Course, 1987).

New Jersey Correctional Officers Training Academy, Training Advisory Council (1988): guest speaker on progressive firearms training and training liability.

Jacksonville (FL) Police Department (Firearms Instructor Course, 1988): conducted handgun and shotgun instructor course.

Tennessee Bureau of Investigation (Firearms Instructor Course, 1988): trained TBI firearms instructors in preparation for agency's transition from revolver to semi-automatic pistol.

Metropolitan Toronto Police (Auto-pistol Workshop. Toronto, Canada 1988): conducted transitional pistol training for members of this agency's police academy, Emergency Task Force, and dignitary protection unit.

NRA Annual Meeting (Orlando, FL 1988): guest speaker before the Legislative Affairs Committee and the opening session of the General Meeting.

Burlington County (NJ) Police Academy (Semi-Automatic Pistol Instructor Workshops, 1985-1987; Shotgun Instructor Workshop, 1987; Officer Survival Course, 1988; Firearms Instructor Update, 1991).

Atlantic City Police Department (Firearms Instructor Course, 1988): trained ACPD instructors to conduct agency's transition from revolvers to pistols.

Professional Conference, "Law and Management in the Security Industry." University of the West Indies, St. Augustine, Trinidad. July 1988. Featured guest lecturer on topic "Current Trends in Firearms Training."

New Jersey Department of Corrections (1988): conducted semi-automatic pistol survey course as part of this agency's process of selecting a service pistol.

Takoma Park Police Department (Maryland, 1988): conducted instructor-level

transitional training course.

Police Counter-Sniper Rifle Course (Glastonbury, Connecticut. 1988): co-instructed this course for police counter-snipers.

SWAT Team Training Course. (Cape May County Police Academy, 1988): conducted tactical team training in handgun, shotgun, assault rifle, and submachine gun.

Lecture presentation: "Police Use of Lethal Force: Legal and Tactical Considerations." Emanuel Kapelsohn and Sgt. Evan Marshall. (Mt. Laurel, New Jersey. 1988).

Jacksonville (Florida) Police Department (Firearms Instructor Workshop, 1988): conducted transitional training instructor course preliminary to this agency's switch to semi-automatic pistols.

Conducted Glock Armorer Courses in Atlantic City, Boston, Sacramento, San Francisco, San Diego, Carson City (Nevada), Washington, Chicago, Trenton, New York City, Philadelphia, Indianapolis, Baltimore, Spokane, Atlanta, Greensboro, Carlisle (PA), Phoenix, Oklahoma City, Seattle, San Antonio, Jersey City, St. Thomas, Barbados, Billings (MT), Springfield (MO), Wenatchee (WA), Jersey City (NJ), Bergen County (NJ) Police Academy, Wyandotte (MI), Essex County (NJ) Police Academy, Overland (MO), Irvington (NJ) Police Department, San Antonio (TX), Miami (FL), South Carolina Justice Academy, North Carolina Justice Academy, St. Petersburg (FL), Jacksonville (FL), Toronto, Barbados, Chapin (SC), Smyrna (GA), Louisiana State Police Academy, and other locations (1987-1993).

Conducted Glock Firearms Instructor Workshops for/at Fulton County Sheriff's Office (NY), Yellowstone County Sheriff's Office (MT), Middlesex County (NJ) Police Academy, Bergen County (NJ) Police Academy, El Cajon (CA) Police Department, Barbados Police Service, St. Petersburg (FL) Police Department, North Platte (NE) Police Department, Overland (MO), Chapin (SC), Essex County (NJ) Police Academy, Springfield (MO) Police Department, Wenatchee (WA), Spokane (WA) Police Academy, Snohomish County (WA) Sheriff's Office, Louisiana State Police Academy, Jersey City (NJ) Police Department, Smyrna (GA), and others (1987-1993).

Conducted Glock Armorer Classes and Glock Firearms Instructor Workshops at Glock facility in Smyrna, Georgia, 1988-1993 (multiple classes).

Massachusetts Metropolitan Police (Boston, Massachusetts. 1988): trained firearms instructors to conduct this agency's transition to semi-auto pistols.

Sacramento Municipal Utilities District (California, 1988): trained nuclear security firearms instructors for Rancho Seco nuclear power facility.

American Society of Law Enforcement Trainers, Second Annual International

Training Seminar (Kansas City, Missouri. 1989): conducted instructor-level workshop on concealed handgun draw techniques and close-range defensive tactics.

Metropolitan Police (Washington, D.C., 1989): conducted two programs to train firearms instructors and armorers to implement this agency's transition to semi-automatic pistols.

Camp Smith, NY (1989): Speaker at Westchester County Firearms Instructors Seminar on Semi-Automatic Pistol Transitional Training. Topic: "Safety In The Transitional Training Program."

Trenton (New Jersey) Police Department (1989): trained firearms instructors and armorers to conduct agency's transition to semi-automatic pistols.

New York Legal Aid Society (New York City, 1989?): co-instructed (with Firearms Examiner D. Frangipani) firearms evidence lecture for attorneys.

Philadelphia Police Department (1989): trained firearms instructors and armorers to conduct agency's transition to semi-automatic pistols.

Trinidad-Tobago Police Academy (Port-of-Spain, 1990): presented firearms instructor workshop in conjunction with handgun training program conducted at Teteron Military Base.

Louisiana State Police Academy, Baton Rouge, LA (1990): conducted submachine gun instructor school.

New York State Police (1990): performed a contract to conduct a series of programs at five locations throughout New York State to train NYSP firearms instructors to conduct agency's transition to semi-automatic pistols.

IALEFI Regional Training Conference (Long Island NY. 1990): conducted dim-light handgun training class.

Henrico County Police Department (Virginia, 1990): conducted two training programs to prepare agency's instructors to conduct transition to semi-automatic pistols.

Virgin Islands Police Department (St. Thomas, 1990): conducted semi-automatic pistol instructor training program.

Developed police shotgun armorer training program for O. F. Mossberg & Sons, and conducted first Mossberg Shotgun Armorer Courses in Burbank, Tacoma, Philadelphia, North Haven (CT), South Carolina Criminal Justice Academy, North Carolina Justice Academy, Skokie (IL), Kansas City, San Antonio, Louisiana State Police Academy, Salt Lake City, and other locations (1990-1992). Course revised 2000, below.

Baltimore City Police Department (1990): conducted semi-automatic pistol instructor training program.

Missouri State Highway Patrol (1990): presented training program to prepare agency's instructors to conduct transition to semi-automatic pistols.

Atlantic County's Prosecutor's Office: conducted Firearms Instructors Recertification Course for all police firearms instructors in county (1990-2001)

Phoenix Regional Police Academy (1991): conducted armorer and semi-automatic pistol instructor training program.

Maryland National Capital Park Police (1991): conducted semi-automatic pistol instructor training program.

IALEFI Regional Training Conference (Dutchess County, N.Y. 1991): taught classes on cover mode and involuntary discharge; advanced shotgun techniques.

DSIP (Caracas, Venezuela. 1991): conducted firearms training program for bodyguard detail of President of Venezuela, and for members of drug task force and elite counter-terrorist unit.

Oregon State Police (1991): conducted training program to prepare agency's instructors to conduct transition to semi-automatic pistols.

Clients for which Mr. Kapelsohn has provided training and consulting services, both domestically and abroad from 1983 through the present time, include investigative agencies, executive protection details, armored car and precious metal companies, corporations involved in newspaper publishing, advertising, finance, pharmaceuticals, insurance, defense manufacturing, mining, firearms and related products, steel, the movie/television industry, and manufacturing industries; police departments, federal agencies, cities, and state law enforcement training commissions.

Kutztown Jaycees (1991): conducted firearms safety and BB gun marksmanship training class for 8-12 year olds.

Seattle Police Department (1991): conducted semi-auto pistol instructor program

American Society for Industrial Security (Schuylkill Valley Chapter, 1992): presented lecture on current trends in security and law enforcement firearms training.

NJ Department of Corrections, Glock 18 (select-fire pistol) Course for Witness Protection Detail, Atlantic City Police Range (1992)

American Society of Law Enforcement Trainers Fifth International Training Seminar (Milwaukee 1992): presented instructor-level classes on involuntary muscular contraction and involuntary discharge.

IALEFI Regional Training Conference (Dutchess County, NY 1992): presented lecture on training-related liability, documentation of training, and written agency firearms policy.

IALEFI Regional Training Conference (Long Island, NY 1992): conducted classes on tactical handgun and dim-light handgun.

Reading Area Community College (1992): Police Semi-Automatic Pistol Instructor Workshop.

National Tactical Invitational, Lewisberry, PA 1992: taught class, "Legal Considerations in the Use of Deadly Force."

Northeastern Berks Regional Police Department (1992): Semi-Automatic Pistol Training Program.

Salt Lake County Sheriff's Department (1992): trained armorers and firearms instructors to conduct transition to semi-automatic pistols.

Tactical Shotgun Course (1993): Pleasantville (NJ) Police Range.

IALEFI Regional Training Conference (Nassau County, NY 1993): conducted class on firearms-related liability, written departmental firearms policies, and documentation of training.

Dallas Police Department (1993): conducted police firearms instructors course.

North Carolina Justice Academy, Statewide Firearms Instructors Conference (1993): Presented classes: Involuntary Muscular Contraction & Unintentional Discharge; Developing Dynamic Training Exercises for Patrol Officers.

Jacksonville (FL) Police Department (1993): conducted police firearms instructors course.

Carnegie Mellon University Police Department (Pittsburgh 1993): conducted transitional training program and handgun instructor workshop.

Calgary Police Service Tactical Unit (1993): taught special weapons course including submachine gun, shotgun, rifle, and handgun.

Yardley, PA (1994): Instructed Defensive Handgun Course.

Guest Speaker on topic "Should I Carry a Gun?" at JCK Show, Las Vegas, NV (June 1994).

Connecticut Police Academy, Meriden, CT. Co-instructed senior instructor program "Selecting a Shoulder Weapon" (April 1994).

"Firearms Training Liability and Trends," Lehigh Valley Chapter, American Society for Industrial Security (1994).

Kutztown Police Department (1994): conducted handgun and shotgun training.

Defensive Shotgun Courses, Pittsburgh, PA and Harvard, Mass. (1995).

Handgun training and qualifications, Eastern Armored Service (Trenton, NJ 1994-1996).

Guest speaker, Firearms Committee, Pennsylvania Municipal Police Officers Education and Training Council (Hershey, PA 1995).

Connecticut Police Academy, Meriden, CT. Co-instructed Tactical Shotgun Instructor course (1995).

"Trends in Police Firearms Training," Pennsylvania Burglar and Fire Alarm Association, Allentown, PA (1995).

Senior Firearms Instructor Course, Allentown Police Academy (PA 1995).

Defensive Handgun Course, Lehigh County District Attorney's Office, Allentown, PA (1996).

Firearms Instructor Recertification Course, Dallas Police Department, Dallas, TX (1996).

Glock 19 Transition Courses, Princeton Armored Service, Trenton, NJ (1995-6)

Lecture: "Firearms Training-Related Liability," Annual Conference, Arizona Law Enforcement Firearms Instructors Association, Mesa, AZ (1996).

Firearms Safety Program, Cub Scouts of America, Topton, PA (1996).

Basic Personal Protection Handgun Courses, Topton (PA) Fish & Game Association Range (1994-1996).

IALEFI Handgun Safety Check, IALEFI Regional Training Conference, Philadelphia Police Academy (1996).

Legal and Practical Aspects of Firearms Self-Defense for Civilians, Muhlenberg Township Recreation Department (1996-1997).

American Society of Law Enforcement Trainers Regional Training Conference, Bergen County (NJ) Police Academy (1996): conducted instructor-level courses on Tactical Handgun Skills; Dim-Light Handgun.

1996 IALEFI Annual Training Conference, Mesa, AZ. Co-instructed instructor-

level courses on Training-Related Liability; Safety and Use of Reactive Steel Targets.

North Carolina Justice Academy Statewide Instructors Conference: conducted instructor-level lectures on firearms safety, dim-light firing techniques, and one-handed firearms manipulation (1997).

Berks County Sheriff's Department: conducted revolver-to-semiautomatic pistol transitional training for this 38-officer agency (1997).

IALEFI Regional Training Conference (Oklahoma City Sheriff's Office 1997): conducted instructor-level program, "Developing Dynamic Range Exercises for Patrol Officers."

Berks County Sheriff's Department: assisted in conducting in-service handgun and shotgun training, remedial training, and qualification (1997-2007, 2012).

IALEFI Annual Training Conference (Columbia, Missouri, 1997): co-instructed instructor-level program, "Legal Liability Update"; conducted IALEFI Handgun Safety Check for over 100 students; chief safety coordinator for this 6-day conference involving some 500 participants (students, instructors, vendors) in day and night training activities, displays, and competitions. Courses attended: see above.

Lehigh County (PA) District Attorney's Office (1997): conducted handgun training course.

Kutztown (PA) Police Department: conducted in-service handgun and shotgun training and qualification (1997, 2000, 2001, 2002, 2003).

Harrisburg Area Community College: Co-instructed pilot judgmental use of force class for Pennsylvania MPOETC (1998).

Allentown (PA) Kiwanis Club: Guest speaker on "Firearms Safety and Self-Defense" (1998).

U.S. Department of Health & Human Services, Office of the Inspector General. Training and consulting contract to assist agency in updating its firearms training program for Special Agents (1998).

Northeastern Berks Regional Police Department (1998): Conducted handgun and shotgun qualifications and remedial training.

Berks County Postmasters Association: Guest speaker on "Personal Security" (1998).

Less Lethal 12-Gauge Impact Munitions User Certification Course (Berks County, PA, 1998).

Camp Cadet, Oley, PA (1998): Firearms safety presentation for 10-14 year olds at summer camp sponsored by Pennsylvania State Police.

O.C. Civilian Users Certification Courses: Conducted a series of courses for employees and for security officers of Fortune 500 company (1998-2001).

IALEFI Annual Training Conference (West Palm Beach, FL, 1998): Presented instructor-level program, "Designing and Using Performance Objectives in Firearms Training"; conducted IALEFI Handgun Safety Check for over 100 students; chief safety coordinator for this 6-day conference involving some 500 participants (students, instructors, vendors) in day and night training activities, displays, and competitions. Courses attended: see above.

Harrisburg Area Community College: Assisted in presenting judgmental use of force instructor certification course for Pennsylvania MPOETC (1999).

Police Patrol Rifle Users and Instructors Courses (Muhlenberg Twp. Police Department 1999).

Presentations to Allentown, PA Chapter, American Inns of Court, on "Firearms, Tactics and the Law" (Sept. 1999) and "Use of Experts in Firearms Cases" (Oct. 1999).

IALEFI Annual Training Conference (Phoenix, 1999): Conducted IALEFI Handgun Safety Check for over 100 students; chief safety coordinator for this 6-day conference involving some 400 participants (students, instructors, vendors) in day/night training classes, displays and competitions.

Allentown (PA) Police Academy: Basic Recruit Training Academy classroom instructor on "Use of Force in Law Enforcement;" assistant range instructor in firearms (1999-2007). "Laws of Arrest" and "Criminal Procedure" (2007).

Firearms Overview Course (Allentown Police Academy, 1999): presented classroom and range program to researchers and doctors from University of Pennsylvania (FICAP) study on gunshot injuries.

IALEFI RTC (Philadelphia Police Academy, 2000): taught two courses on Tactical Shotgun.

Eddie Eagle Firearms Safety Program taught to approx. 120 children, grades K through 2, at The Swain School (Allentown, PA, 2000).

Firearms Instructor Update (Pennsylvania State Police Academy, 2000): presented instructor-level program for Pennsylvania Municipal Police Officers Education and Training Commission.

2000 IALEFI ATC, Tampa, FL: conducted IALEFI Handgun Safety Check for over 100 students; chief safety coordinator for this 6-day event involving

nearly 500 participants (students, instructors, vendors) in day and night training activities, displays and competitions; taught Mossberg Shotgun Armorer Certification Course.

Lehigh County (PA) District Attorney's Office (2000): conducted training course, "Introduction to Firearms for Prosecutors" (CLE accredited) at Allentown Police Academy.

Mossberg Shotgun Armorer Certification Courses (North Haven, CT, 2000): presented two courses for police and military armorers. Consultant to Mossberg re. revision of Armorer's Manual.

"Legal and Practical Aspects of Firearms Self-Defense" (Topton, PA, 2000): presented two courses at East Penn Outdoor Sportsmen's Expo.

Eastern Armored Service (PA, 2000): conducted Glock pistol transitional training for armored car personnel.

Mossberg Shotgun Armorer Certification Course (Fairfax, VA, 2000): taught course for police armorers.

Guest Speaker at graduation dinner, Allentown (PA) Police Academy (2001)

Para-Ordnance LDA Pistol Armorer Certification Courses (Orange County, CA and Oak Lawn, IL, 2001): taught courses for police and civilian armorers.

Para-Ordnance LDA Pistol Firearms Instructor Workshop (Oak Lawn, IL, 2001): taught course for police firearms instructors in conjunction with agency's transition to this model of semi-automatic pistol.

Para-Ordnance LDA Pistol Armorer Certification Course, Rhode Island (2001).

Guest Speaker, "Firearms in the Home," Allentown Rotary Club (2001)

Mossberg Shotgun Armorer Certification Course, Lisle, IL (2001): taught course for police armorers.

Firearms Training and Qualification, Berks-Lehigh Regional Police Department (PA, 2001). Conducted user-level training for this newly-formed agency with pistol, shotgun, patrol rifle, and less lethal impact munitions.

Guest Instructor, Citizens Police Academy, Exeter Township Police Department (PA, 2001). Presented demonstration/discussion of concealed weapons and related topics.

Personal Protection Course, Carpenter Technology Corporation, Reading, PA (2001). Taught personal protection course (including pepper spray and hand-to-hand self defense) to executives of Fortune 500 company and their spouses.

Firearms Instructor Update (Northeast Counter-Drug Training Center, Ft. Indiantown Gap, PA 2001): presented instructor-level program for Pennsylvania Municipal Police Officers Education and Training Commission.

Tacoma Police Department (WA, 2001). Developed and taught Kimber Pistol Armorer's Workshop and Kimber Pistol Instructor Course for this agency.

Las Vegas Metro Police Department (NV, 2001). Taught Mossberg Shotgun Armorer Certification Course.

Mossberg Shotgun Armorer Certification Courses (North Haven, CT 2001). Taught two armorer courses for O.F. Mossberg & Sons.

Mossberg Shotgun Armorer Certification Course (Utah County Sheriff's Office, UT 2001). Taught law enforcement armorer's course.

"Legal and Practical Aspects of Firearms Self-Defense" (Topton, PA 2001): taught course at East Penn Outdoor Sportsmen's Expo.

Para-Ordnance LDA Pistol Armorer Certification Course (North Attleboro Police Department, MA 2001).

2001 IALEFI Annual Training Conference, Reno, NV: conducted IALEFI Handgun Safety Check for some 80 students; assistant safety coordinator for this 6-day event involving nearly 400 participants; taught Mossberg Shotgun Armorer Certification Course; panelist in panel discussion, "Point Shooting vs. Aimed Fire."

Presenter at Muhlenberg Twp. Police Dept. "Firearms and Home Safety" Class (Temple, PA 2001): Lecture to mixed audience of adults and Boy Scouts.

Mossberg Shotgun Armorer Certification Course (Branson Police Department, Branson, Missouri 2001). Taught law enforcement armorer's course.

Mossberg Shotgun Armorer Certification Course, Fairfax, Virginia 2001. Taught Law Enforcement armorer's course to police and military personnel.

Para-Ordnance LDA Pistol Armorer Certif. Course (Southampton, PA 2001)

Mossberg Shotgun Armorer Certification Course, Massachusetts State Police Headquarters, Framingham, MA 2002.

Mossberg Shotgun Armorer Certification Course, Clearwater Police Department, Clearwater, FL 2002.

Beretta DAO Pistol Training Course and Use of Force Legal Issues Class, Bloomsburg University Police Department, Bloomsburg, PA 2002: Trained and certified university police department to carry firearms.

Mossberg Shotgun Armorer Certification Course, Linn County Sheriff's Office, Albany, Oregon 2002

Mossberg Shotgun Armorer Certification Course, Shawnee County Sheriff's Department, Topeka, Kansas 2002.

Para-Ordnance LDA Pistol Armorer Certification Course, Kansas Highway Patrol, Emporia, Kansas 2002.

Citizen's Police Academy, Exeter Township Police Department (PA), Guest instructor, training segment on weapons concealability (2002-2004).

Firearms Instructor Update, Berks County Sheriff's Department, Reading, Pennsylvania (2002)

Mossberg Shotgun Armorer Certification Course, New York City Police Department, Ballistics Section (2002)

Introduction to Firearms for Juvenile Probation Officers, Allentown Police Academy (2002)

Mossberg Shotgun Armorer Certification Course, Watertown Police Department, Watertown, CT (2002)

Mossberg Shotgun Armorer Certification Course, Carol Stream, Illinois (2002)

2002 IALEFI Annual Training Conference, San Diego, CA. Chief safety coordinator for this 6-day event involving over 300 participants in day and night training activities, trade show, demonstrations and shooting competitions. Co-instructed course on safety issues and procedures in simulation and role-playing training exercises.

Mossberg Shotgun Armorer Certification Course, Martin County Sheriff's Office, Stuart, Florida (2002).

Mossberg Shotgun Armorer Certification Course, Fairfax, VA (2002).

Bureau of Alcohol, Tobacco & Firearms, Firearms Instructor Seminar, Orlando, FL (2002). Guest Instructor.

Berks-Lehigh Regional Police Department, remedial dim-light training. (2003)

Guest Lecturer, University of Pennsylvania class, "Injury and the Public's Health," School of Medicine/School of Public Health. Professor Charles Branas, Ph.D. (2003)

Patrol Rifle Instructor Course, Reading, PA (2003)

Patrol Rifle Operator's Course, Reading, PA (2003)

Bureau of Alcohol, Tobacco & Firearms, Firearms Instructor Seminar, San Diego CA (2003). Guest Instructor.

Citizen's Police Academy, Allentown Police Academy, Allentown, PA. Instructor in Use of Force in Law Enforcement, Laws of Arrest (2003-5)

Bureau of Alcohol, Tobacco & Firearms. Firearms Instructor Seminar, Orlando, FL (2003). Guest Instructor

IALEFI Annual Training Conference, Orlando, FL (2003). Assistant range officer in Advanced Tactical Rifle class.

Mossberg Shotgun Armorer Certification Course. Rockland County (NY) Police Academy (2003). Instructor.

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Firearms Instructor Recertification Course. Atlantic County, NJ (2002, 2003). Instructor

Defensive Shotgun Course. Reading, PA (2003). Instructor

Firearms Instructor Updates/Requalifications. Berks County Sheriff's Department, Reading, PA (2003-2005).

Guest Instructor, Lehigh County Municipal Emergency Response Team Training, DeSalles University (2004)

Bureau of Alcohol, Tobacco & Firearms. Firearms Instructor Seminar, Orlando, FL (2004). Guest Instructor

Patrol Rifle Instructors Course. Reading, PA (2004). Instructor

Patrol Rifle User's Course. Reading, PA (2004). Instructor

Bureau of Alcohol, Tobacco & Firearms. Firearms Instructor Seminar, Los Angeles, CA (2004). Guest Instructor

IALEFI Annual Training Conference, Dayton, Ohio (2004). Taught class "Legal Update for Firearms Instructors."

Patrol Rifle/Shotgun Workshop. Reading, PA (2004). Instructor

Atlantic County Prosecutor's Office, Firearms Instructor Update. Atlantic County, NJ (2004). Presented 3-day range and classroom instructor update.

Lecture, "Firearms, Firearms Safety and Self-Defense," Lions Club, Bowers, PA (2004). Guest lecturer.

Defensive Handgun & Shotgun Class. Hellertown, PA (2004). Instructor

Bureau of Alcohol, Tobacco & Firearms. Firearms Instructor Seminar, San Francisco, CA (2005). Guest Instructor

Tactical Team Commanders Course, Jefferson Township (NJ) Police Department, for Fox Valley Technical College/ Team One Network, Guest Instructor (2005).

Advanced Defensive Handgun Class. Hellertown, PA (Spring 2005). Instructor.

Firearms Safety and Tactics Workshop. Salisbury Township Police Department, Allentown, PA (2005). Instructor.

Bureau of Alcohol, Tobacco & Firearms. Firearms Instructor Seminar, San Diego, CA (2005). Guest Instructor.

2005 IALEFI Annual Training Conference, Reno, NV. Co-instructed instructor-level class on fast, accurate handgun shooting and target-focused fire. Conducted Handgun Safety Check for approx. 100 new attendees. Chief Safety Officer coordinating safety for this 6-day training conference, involving over 400 attendees in classroom and firing range courses, firearms ompetition, trade show with hands-on firearms demonstrations, etc.

Atlantic County Prosecutor's Office, Firearms Instructor Update. Atlantic County, NJ (2005). Presented 3-day range and classroom instructor update.

O.C. ("Pepper Spray") Users Courses (Pennsylvania 2005). Presented training courses for security officers of major pharmaceutical manufacturer.
Patrol Rifle Operators Refresher Course (Berks County Sheriff's Dept. 2005).

Advanced Defensive Handgun Course. Hellertown, PA. (Fall 2005). Instructor.

Defensive Handgun & Shotgun Training (Pennsylvania 2005, 2006, 2007, 2008, 2009). Presented a series of firearms training courses for security officers of a major pharmaceutical manufacturer.

"Home Firearms Safety and Self-Defense" lecture/demonstration for 35th Anniversary Charter Night, Lions Club, Bowers, PA (2006).

North Carolina 2006 Police Firearms Instructors Conference, North Carolina Justice Academy (2006). Featured presenter: lectured to 250 law enforcement firearms instructors on safety in simulation training; involuntary muscular contraction and unintentional discharge of firearms; police deaths and administrative gun handling safety considerations; and mental conditioning and tactics in officer- involved shootings.

2006 IALEFI Annual Training Conference, West Palm Beach, FL. Moderator of panel discussion, "Panel of Experts on Firearms Topics," including techniques for covering suspects at gunpoint, manipulation of manual safeties, use of

weapon-mounted lights, etc. Assisted in conducting Handgun Safety Check for participants; monitored classes on Patrol Rifle, Concealed Carry Handgun.

Allentown Police Tactical Pistol League. Conducted training session for police officers. (2006)

Patrol Rifle Workshop. Hellertown, PA. (2006)

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ (2006). Presented classroom and range instructor update.

IALEFI Regional Training Conference, Ocean City, Maryland (2006). "Tactical Handgun Overview." Featured instructor at regional police training conference.

"Use of Force in Law Enforcement." Two classes; Kutztown Police Department, Kutztown, PA (2007)

"Legal & Practical Aspect of Self-Defense with Firearms," Hellertown, PA (Winter 2007). Lecture/demonstration presentation to some 100 attendees.

"Use of Force Legal Concepts," Reading, PA (2007). Conducted instruction on principles of justification for use of force, etc. for Carpenter Technology security officers.

Glock Pistol Transitional Training, Eastern Armored Services (2007). Conducted transitional training classes for armored car personnel.

Pepper Spray User's Course. Conducted pepper spray user training and certification for corporate/industrial security officers. (2007)

IALEFI 2007 Annual Training Conference, San Antonio, TX. Assisted in conducting handgun safety check for 175 firearms instructors.

"Police Involved Shootings – When the Smoke Clears," Westchester County Detectives Association, Yorktown Heights, NY (2007). Lecture presentation to 160 attendees on subjects including psychological and perceptual distortions and stress reactions of officers involved in shootings; involuntary muscular contraction and accidental discharge of firearms; liability and safety issues of weapon-mounted lights and lasers; officer reluctance to fire; etc.

"Use of Force Legal Theory" class and "Glock Pistol User's Class" conducted for California University of Pennsylvania Police Department. (California, PA 2007). Consulted, and conducted classroom and range instruction for this university police department in its adoption of a service pistol.

Legal & Practical Aspects of Self-Defense with Firearms, Hellertown, PA (Fall 2007). Lecture/demonstration presentation to 30 attendees.

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course.

Atlantic County, NJ (2007). Presented 3-day firearms instructor update (classroom and range) for approximately 30 police firearms instructors.

Pepper Spray User's Course. Conducted pepper spray user training and certification for corporate/industrial security officers. (2008, 2010)

Defensive Handgun, Shotgun and Use of Force Training (Pennsylvania 2008 - 2012). Conducted training for security officers of a major pharmaceutical manufacturer.

2008 IALEFI ATC, Reno, Nevada. Conducted IALEFI Handgun Safety Check for approximately 125 shooters on range. Taught classes on "Shotgun Instructor Skills."

Defense Training International, Women's Handgun Class. Rochester, Indiana (2008). Served as adjunct instructor for this women-only class.

"Covering Suspects at Gunpoint and Involuntary Muscular Contraction." Training segment conducted for Greene County Sheriff's Reserve (2008)

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ (2008). Presented 3-day firearms instructor update (classroom and range) for approximately 25 police firearms instructors.

Greene County Sheriff's Department. Assistant range instructor for dim light Handgun & rifle qualification; assisted in developing dim light rifle qualification course; provided remedial instruction as needed. (2009-2012)

"How Close is Too Close?" Training segment conducted for Greene County Sheriff's Reserve (2009)

"Ammunition Inspection Procedures," "Dry Practice Safety Procedures," and "Safety in Gun Cleaning" training segments conducted for Greene County Sheriff's Reserve (2009)

Indiana University (Bloomington, IN), Criminal Justice Department. Taught 3-credit senior seminar, "Police Use of Force." (2009, 2010)

2009 Conference, International Law Enforcement Educators & Trainers Association (Chicago, IL): taught course, "Bulletproofing Your Agency's Use of Force Policies."

2009 IALEFI Annual Training Conference, West Palm Beach, Florida. Conducted IALEFI Handgun Safety Check (range drills) for 70-plus trainees; taught course, "Management and Investigation of Officer-Involved Shootings" (two sessions).

Intermediate Defensive Handgun. Trained female student in defensive handgun skills in intensive 2-day program. Hellertown, PA. (2009)

Remedial Handgun Training. Provided series of remedial training sessions for two female law enforcement officers. (Indiana 2009)

Police Patrol Rifle Instructor Course, Reading, PA. (2009)

Prosecutor's Training, "Police Use of Force," Greene County, IN. (2009) Developed and presented this mandatory training course for police from agencies throughout the county.

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ (2009). Presented 3-day firearms instructor update (classroom and range) for approximately 35 police firearms instructors.

"Police Use of Force." Citizens' Police Academy, Linton Police Department, Indiana (2010).

Firearms Safety & Home Firearms Storage Safety; Distinguishing Toy Guns and Airguns from "Real" Guns; Dry Practice Safety Protocols; Drawing the

Handgun. Training segments conducted for Greene County Sheriff's Reserve (2010).

Moderator and Panelist, Panel Discussion: "Current Issues in Firearms & Tactics Training, 2010 IALEFI Annual Training Conference, San Antonio, TX. Also, conducted Handgun Safety Check for 120 first-time attendees.

Patrol Rifle Instructor & User's Course, Reading, PA (2010).

Police Firearms Instructor Update, Allentown (PA) Police Academy (2010).

Prosecutor's Training, "Police Use of Force Update," Greene County, IN (2010)

"Use of Force Law & Policy," Berks County (PA) Sheriff's Department (2010)

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ (2010). Presented two 3-day firearms instructor update courses (classroom and range) for approximately 45 police firearms instructors.

Judgmental Use of Force Training. Designed and conducted a judgmental use of force training program for law enforcement officers in Greene County, Indiana. Program utilized FATS video simulator, firearms, OC spray, Taser, verbal challenges, use of cover, verbalization with suspects and fellow officers, preparing and debriefing after writing an incident report on one of the scenarios the trainee experienced, etc. (Bloomfield, IN 2011).

Judgmental Use of Force Instructor Certification Class. Trained a cadre of instructors to teach a judgmental use of force program, including the FATS system, report writing, etc. (Bloomfield, IN 2011)

Clearing Handgun Stoppages. Training conducted for Greene County Sheriff's Reserve (2011).

One-handed Handgun Operation. Training conducted for Greene County Sheriff's Reserve (2012)

Police Use of Force, Citizens Police Academy, Linton, IN (2012)

Panelist, Use of Force "Panel of Experts" at 2012 ILEETA Conference, Chicago.

Patrol Rifle Instructor Course, Berks County, PA (2012)

FATS Judgmental Firearms Training Program, Greene County, IN (2012). Designed and helped to conduct FATS simulator training for law enforcement officers from countywide agencies.

IALEFI 2012 Annual Training Conference, Nashville, TN. Taught class, "The Firearms Instructor as Expert Witness."

Live-Fire Decision Making Shooting Exercises, Greene County, IN (2012).

IALEFI Shotgun Master Instructor Development Progam, Monroeville, PA (2012)

Firearms Instructor Update & Recertification, Atlantic County, NJ (2012)

Legal & Practical Aspects of Self Defense With Firearms. Hellertown Sportsmen's Association, Hellertown, PA (2012)

Police Explorers firearms training class. Berks County, PA (2012)

Berks County Sheriff's Department training and qualification (2012)

North Carolina Justice Academy, Firearms Instructor Update. Lecture "Post Shooting Procedures, Policies and Concerns" (2012). Presentation to 125 firearms instructors representing law enforcement agencies statewide.

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ (2012). Presented two 3-day firearms instructor update courses (classroom and range) for approximately 45 police firearms instructors.

2013 IALEFI Annual Training Conference, Mobile, AL. Conducted IALEFI Handgun Safety Check for approx.. 90 attendees; Presented class: "Encouraging Off-Duty Carry."

Legal & Practical Aspects of Firearms Self-Defense. Hellertown, PA (2013)

IALEFI Regional Training Conference, Harrisburg Area Community College,

Piccola Law Enforcement Training Center. Conference Coordinator. Taught courses, "Officer-Involved Shootings: Policies, Procedures & Concerns" and "Lethal Force Confrontations Instructor." Assisted in presenting Tavor Rifle Armorer Level I Class. (2013)

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ (2013). Presented two 2-day firearms instructor update courses (classroom and range) for approximately 50 police firearms instructors.

Norfolk Southern Railroad Police Training Seminar, "Bulletproofing Your Agency's Use of Force Policy" and "Officer-Involved Shootings: Policies, Procedures and Concerns." Brosnan Forest, SC (2014).

Deadly Force Expert Panel, 2014 ILEETA Conference, Lombard, IL. Panelist.

2014 IALEFI Annual Training Conference, Amarillo, TX. Conducted IALEFI Handgun Safety Check for approximately 90 attendees; presented class "Using Firearms Experts in Officer-Involved Shooting Cases."

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ (2014). Presented two separate 2-day firearms instructor update courses (classroom and range) for police firearms instructors county-wide.

Police Patrol Rifle Instructor Course. Hosted by Allegheny Township Police Department, Duncansville, PA. (2014)

2015 ILEETA Conference, Panelist, "Deadly Force Panel of Experts;" Panelist, "Active Shooter Panel." Wheeling, IL.

2015 IALEFI Annual Training Conference, West Palm Beach, FL. Taught two classes for 76 students, "Training Gone Wrong."

Police Firearms Instructor Course. Hosted by Martinsburg Police Department, PA. (2015)

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ (2015). Presented 2-day firearms instructor update courses (classroom and range) for police firearms instructors county-wide.

Pilot program, "Police Use of Force," Piccola Law Enforcement Training Center, Harrisburg Area Community College (2015). Co-instructed this pilot program for mandatory in-service training class to be presented in 2016 to approximately 25,000 police officers throughout the Commonwealth of Pennsylvania.

IALEFI Regional Training Conference, Freeport Police Range, Long Island, NY (2015). Taught two instructor-level classes on current law enforcement use-of-force issues and cases. Classes attended: see above.

MPOETC Instructor Training Class for 2016 Mandatory In-Service Training ("MIST") "Police Use of Force" Class. Co-instructed this instructor-training class for the Pennsylvania MPOETC for approximately 40 instructors at the Montgomery County Law Enforcement Training Center, Conshohocken, PA (2015).

Basic Defensive Handgun Course, Hellertown, PA 2016.

"Deadly Force Panel of Experts" panelist, 2016 ILEETA Conference, Rosemont, IL.

Moderator and Panelist, Panel Discussion, "Firearms Training and Use of Deadly Force," 2016 IALEFI Annual Training Conference, Mobile, AL.

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ (2016). Presented two 2-day firearms instructor update courses (classroom and range) for police firearms instructors county-wide.

Civilian Response to Active Shooter Events (CRASE) Training, Lehigh Valley Consortium of Professional Organizations (2016) Presented this Texas State University program for approximately 40 attendees.

Use of Force and Firearms Training, Upper Macungie Township Police Department, Pennsylvania. Provided classroom and range instruction for this municipal police department (2016).

Firearms Instructor Workshop and Remedial Handgun Training for Northampton County Sheriff's Department, Pennsylvania (2016).

Rangemaster Tactical Conference, lecture presentation, "Use of Force Legal Cases: Lessons Learned." Little Rock, Arkansas (2017).

"Deadly Force Panel of Experts" panelist, 2017 ILEETA Conference, St. Louis, MO.

"Patrol Rifle Panel" panelist, 2017 ILEETA Conference, St. Louis, MO.

North Carolina Justice Academy, IALEFI Regional Training Conference, lecture presentation, "Officer-Involved Shootings: When Tiny Details Become Critical," 2017.

IALEFI 2017 Annual Training Conference, West Palm Beach, FL. Lecture presentation, "Legal Update on Officer-Involved Shootings: The Expert Witness Viewpoint."

Armed Security Officers Training Program, Reading, PA. Classroom and range training for two groups of armed security officers for Reading Hospital/Reading Health System. (2017)

Patrol Rifle Instructor Course, hosted by Muhlenberg Township Police

Department, Reading, PA. (2017)

Firearms training and consulting for church security team. Berks and Lehigh County, PA 2017-2021.

Use of force and firearms training and consulting for synagogue security team. Lehigh County, PA 2017-2021.

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ (2017). Presented firearms instructor update course (classroom and range) for police firearms instructors county-wide (two classes) 2017.

"Deadly Force Panel of Experts" panelist, 2018 ILEETA Conference, St. Louis, MO.

"Active Shooter Panel" panelist, 2018 ILEETA Conference, St. Louis, MO.

"Review of Recent Officer-Involved Shootings," IALEFI ATC, Houston, TX 2018.

Patrol Rifle Instructor Course for Assistant Chief of Upper Macungie Township Police Department, 2017-2018 (multiple sessions).

Pepper gel classes, taught for security team members of religious congregations. (2018, 2019)

Class on tactical first aid, including use of Israeli battle dressings, tourniquets, Combat Gauze, and occlusive dressings, taught for teachers and staff of religious congregation. (2018)

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ. Presented two firearms instructor update courses (classroom and range) for police firearms instructors county-wide (2018).

Pepper gel class, taught for employees and family members of professional firm. (2018)

IALEFI ATC, West Palm Beach, FL (2019): Taught instructor-level course on "Officer-Involved Shootings" to approximately 35 instructors.

Firearms training and tactical first aid classes, taught to security group of religious congregation in Allentown, PA (2019)

Active Shooter/Left of Bang: Coordinated and assisted in two large lecture presentations on these subjects at Trexlertown, PA, and at Harrisburg Area Community College, Law Enforcement Training Complex for approximately 100 attendees each, with lead lecturer Don Alwes (2019).

Active Shooter/Left of Bang: Hellertown, PA. Hands-on active shooter response class, Airsoft simulation scenarios and live fire training, co-instructed with Don Alwes. (2019)

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ. Presented firearms instructor update courses (classroom and range) for police firearms instructors county-wide, two sessions (2019).

Active Shooter Preparation and Response: St. John's Church on Morgan Hill, Easton, PA. Presentation to Consistory Group (2019)

Active Shooter Response and the Law: Presentation for Allentown Barrister's Inn (attorneys, prosecutors and judges). PACLE Credit-approved. (2019)
"Firearms Safety, Legal Justification for Use of Force, and Policy" presented for approximately 30 members of church security team. Allentown, PA (2020)

Pepper gel training, presented for staff and religious school teachers of a house of worship. Allentown, PA (2020)

M4 Carbine Use of Cover and M9 Pistol Training for military personnel at Fort Myer (Joint Base Myer – Henderson Hall), VA (2020)

Police Firearms Instructor Course, Berks County, PA. Hosted by Berks County Sheriff's Office. (2020)

Defensive Handgun and Patrol Rifle, Defense Training International, Sussex, NJ October 2020. Assisted in teaching this course. (John Farnam, chief instructor)

Defensive Handgun Training/Qualification for members of house of worship security team. Berks County (2020).

Police Firearms Instructor Course, Blair County, PA. Hosted by Martinsburg Police Department (2020).

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ. Presented firearms instructor update courses (classroom and range) for police firearms instructors county-wide, two sessions (2020).

Classroom and range defensive handgun training for security officers of a mining operation. Pennsylvania (2021).

"Firearms Safety, Legal Justification for Use of Force, and Policy" presented for approximately 35 members of church security team. Allentown, PA (2021)

"Training an Armed Congregant House of Worship Protective Team," "Active Shooter Discussion Panel" (panel member), and "Deadly Force Discussion Panel" (panel member), ILEETA Annual Conference, St. Louis, MO (2021)

DTI Defensive Handgun Course, Sussex, New Jersey (2021). Served as an Assistant Instructor in this 2-day program for 27 attendees.

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ. Presented firearms instructor update courses (classroom and range) for police firearms instructors county-wide, two sessions (2021).

Defensive Handgun for House of Worship Protective Team Members, Allentown, PA (2022). Lead instructor.

IALEFI Annual Training Conference, Las Vegas, NV (2022). Conducted Safety Check for Attendees. Courses attended, see above.

Firearms Video Simulator Training, Lead Instructor, 3 days, for 35 police and security officers, Allentown, PA (2022)

Defensive Handgun Training and Qualification for house of worship security team members, Lead Instructor, Topton, PA (2022)

Armed Security Officers Training Program, Lehigh County, PA. Wrote Firearms and Use of Force Policy, Designed Training Program, and conducted classroom and range training for armed security officers of large, multi-state public utility company (2020-2022)

DTI Urban Rifle Course, Sussex, NJ, Adjunct Instructor (2022)

Atlantic County Prosecutor's Office, Firearms Instructor Recertification Course. Atlantic County, NJ. Presented firearms instructor update courses for police firearms instructors county-wide, two sessions (2022).

Defensive Handgun Training and Qualification for house of worship security team members, Lead Instructor, Topton, PA (2023)

IALEFI Annual Training Conference, Houston, TX (2023). Conducted Handgun Safety Check for Attendees. Courses attended, see above.

Handgun Qualification/Use of Force Refresher Corporate Security Officers, Allentown, PA (2023)

Handgun Qualification/Use of Force Refresher for Estate Security Officers, Topton, PA (2023)

Plus, numerous basic through advanced and remedial training sessions for individual students and small groups, including private individuals, corporate executives and dignitaries, executive protection personnel, security officers, private investigators, military, federal agents and law enforcement officers at all levels. (1978 to present)

REFERENCES: Personal and professional references available on request.

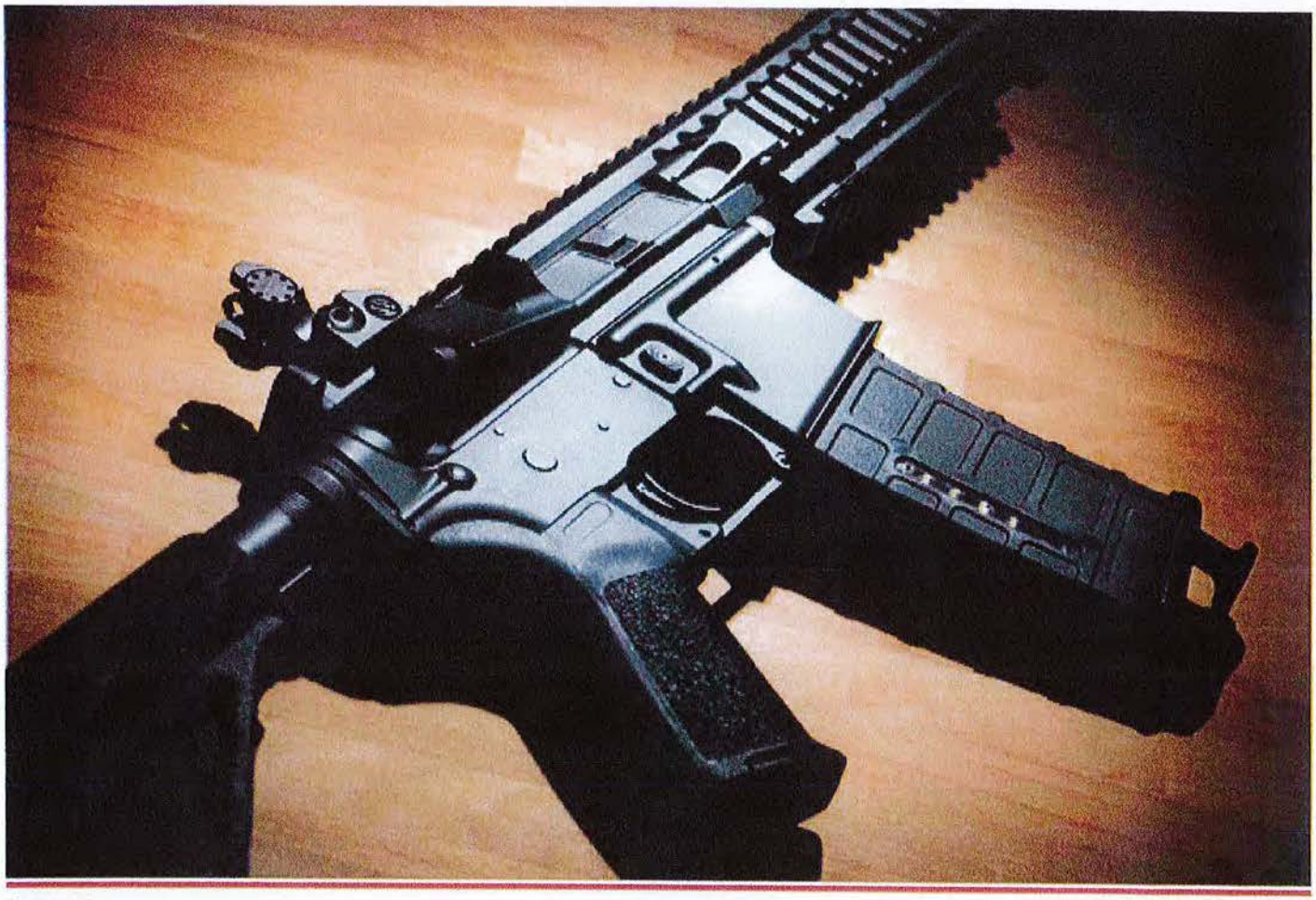
EXHIBIT "2"

NEWS

Pregnant Florida mom uses AR-15 to kill home intruder

By Joe Tacopino

November 4, 2019 | 12:05am | Updated



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A pregnant woman is credited with saving the lives of her husband and daughter after she used an AR-15 to fatally gun down a home intruder, a report said.

The hero mom sprung into action when two intruders entered the family's Lithia, Fla. home last week and pistol whipped her husband while violently grabbing their daughter, according to the Hillsborough County Sheriff's Office.

"They came in heavily hooded and masked," the husband, Jeremy King, told Bay News 9.

"As soon as they had got the back door opened, they had a pistol on me and was grabbing my 11-year-old daughter."

The robbers then pistol-whipped King and kicked him while the man's wife, who is eight months pregnant, retreated into the bedroom.

"When he came toward the back door in her line of sight, she clipped him," King told the outlet. "He made it from my back door to roughly 200 feet out in the front ditch before the AR did its thing."

Police said in a press conference that they found the man's dead body lying in the ditch nearby. The second suspect was on the loose.

The homeowner said he took a "severe beating," but credited his wife for saving him.

"I've got a fractured eye socket, a fractured sinus cavity, a concussion, 20 stitches and three staples in my head," said King.

"Them guys came in with two normal pistols and my AR stopped it. [My wife] evened the playing field and kept them from killing me."

The sheriff's office added that the firearm was in the home legally.

FILED UNDER FLORIDA, HOME INVASION

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EXHIBIT "3"

News4JAX 57°F

WEATHER ALERT Weather Alert: 8 advisories in effect for 5 counties in the area

NEWS

Deputies: 30 rounds fired from AR-15 in deadly Florida home invasion

Incident stemmed from ongoing feud between two groups, investigators say

Garrett Pelican, Digital executive producer

Published: **Apr. 17 2018, 7:16 pm**
Updated: **Apr. 17 2018, 7:20 pm**

Tags: **Florida, Baker County, Weird News, News, Glen St Mary**

(Left to right: Bell, Watkins, Cayden Lauramore, Albino)

GLEN ST. MARY, Fla – Three men say they were asleep inside a mobile home in Glen St. Mary about 4 a.m. Sunday when they heard a voice outside yell "Sheriff's Office!" before the front door burst open.

In stormed a masked gunman who fired off a single round before two of the men inside, one armed with an AR-15 rifle and the other with a handgun, emerged from two bedrooms and opened fire.

Gunfire ripped into the masked gunman and two other intruders, who crumpled to the floor with multiple gunshot wounds.

Those details surfaced Tuesday when the Baker County Sheriff's Office released an arrest report linked to **this weekend's home invasion turned deadly triple shooting**.

Five people are charged in the case. Investigators suspect the home invasion escalated from an ongoing feud between two groups that was stoked by social media threats.

The victims told deputies they acted in self-defense when they turned their guns on the intruders, with one of them estimating he fired over 30 rounds from an AR-15 before the threat was over.

Afterward, the victims retreated to another part of the home before they dialed 911, according to the report. None of them was hurt during the shooting.

The same cannot be said for the intruders, **several of whom were inside a vehicle deputies intercepted as it sped away** from the mobile home off County Road 125.

One of them, Corey Lauramore, died of gunshot wounds to the head. An unidentified 16-year-old remains hospitalized, and a third suspect, William Lauramore, was treated and released to police.

Investigators found a heavy amount of dried blood caked on the front steps of the home, a bloodstained mask with a bullet hole through it and a .380 caliber handgun lying nearby, the report said.

They also recovered an AR-15 rifle and a 9MM handgun inside the home.

The Sheriff's Office said the **five individuals charged in the case were among a group of seven that went to the mobile home that morning to confront and fight** the group staying there.

William Lauramore, 24; Joseph Albino, 24; Zachary Bell, 20; Christian Watkins, 19; and Cayden Lauramore, 15, are charged with home invasion. But additional charges are possible.

Albino, Bell and Watkins provided conflicting details about their involvement in the shooting, but all three said they had no idea others in their group had brought weapons along, according to the report.

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EXHIBIT "4"

Man armed with AR-15 stops attack by neighbor in Oswego

POSTED 5:37 AM, FEBRUARY 27, 2018, BY NANCY LOO AND CHARLES HAYES, *UPDATED AT 12:59PM, FEBRUARY 27, 2018*

This is an archived article and the information in the article may be outdated. Please look at the time stamp on the story to see when it was last updated.

Man armed with AR-15 stops attack by neighbor in Oswego

OSWEGO, Ill. -- A man armed with an AR-15 rifle helped stop a knife attack during an argument in Oswego.

It happened on Monday at an apartment building on Harbor Drive.

Police say it all began when someone with a knife attacked another person during an argument.

Neighbor Dave Thomas, who witnessed the attack, went into his home, got his rifle and ordered the suspect to stop.

"I ran back into the home, into my house and grabbed my AR-15. Grabbed the AR-15 over my handgun. It's just a bigger gun. I think a little bit more than an intimidation factor definitely played a part in him actually stopping."

No shots were fired.

The suspect was able to get away briefly, before police captured him.

The stabbing victim was taken to a hospital, and is expected to recover.

Police say Thomas has a valid firearm owner's identification card and a concealed carry permit. Thomas says he is also a firearms instructor.

"The AR-15 is my weapon of choice for home protection," Thomas said. "It's light, it's maneuverable. If you train and know how to use it properly, it's not dangerous. And this is just a perfect example of good guy with an AR-15 stopped a bad guy with a knife. And there were no lives taken, so all in all it was a good day."

NEWS

Pregnant mom used AR-15 to kill burglar, save husband during home invasion

NEWS

EXHIBIT "5"

THE CORNER

POLITICS & POLICY

Texas Hero Reportedly Used His Own AR to Confront the Sutherland Springs Shooter

By DAVID FRENCH | November 6, 2017 10:54 PM

During today's press conference about the Texas mass shooting, the regional director of the Texas Department of Public Safety indicated that the Texas Good Samaritan, Stephen Willeford, engaged the Sutherland Springs shooter with his own AR:

> He armed himself with an AR assault rifle and engaged the suspect. They engaged in gunfire here at the church. We know that the suspect was shot, when he dropped his assault rifle and jumped in his Ford Expedition and fled the scene.

Given what we know from other reports, this makes a great deal of sense. After all, Willeford apparently fired with a great deal of precision. Here's an account from CNN, taken from an interview of his cousin:

> And what he did, according to his cousin, is exchange fire with the gunman, hitting him in the side and twice in the neck.
>
> "He saw that the guy was wearing body armor, and there was a velcro strap, from the back to the front," detailed Leonard, speaking live on Monday. "He knew from that … that the vulnerable spot was going to be in the side. And so that's where he shot him."

An AR is an easy-to-use, extraordinarily accurate weapon, and one can see how it would enable a surprised civilian to engage the shooter so quickly and effectively.

We keep hearing that AR's are useless for self-defense, that they're simply "weapons of war," useful only for mass killing. This is simply not true. Earlier this year, an Oklahoma man used an AR-15 to kill three home intruders, and multiple self-defense experts have long pegged AR-style rifles as their "home defense weapon of choice." I have one in my own home, and I feel far more comfortable using it than even one of my handguns.

While Willeford obviously didn't prevent the massacre, he did stop the shooter and prevented him from harming anyone else. He did so with exactly the kind of weapon that the gun control lobby would like to deny to law-abiding Americans. That's a fact worth noting.

RETURN TO THE CORNER

DAVID FRENCH is a senior editor of *The Dispatch*. @davidafrench

EXHIBIT "6"

https://www.chron.com/news/houston-texas/article/Harris-County-deputy-s-son-shoots-one-of-two-1712908.php

Harris County deputy's son shoots one of two intruders

15-year-old and sister, 12, were alone when pair entered, so he got dad's rifle

MIKE GLENN
, HOUSTON CHRONICLE **Published 5:30 am CDT, Wednesday, June 30, 2010**

The teenage son of a Harris County deputy constable opened fire with his father's automatic rifle Tuesday after burglars forced their way into the family's home, authorities said.

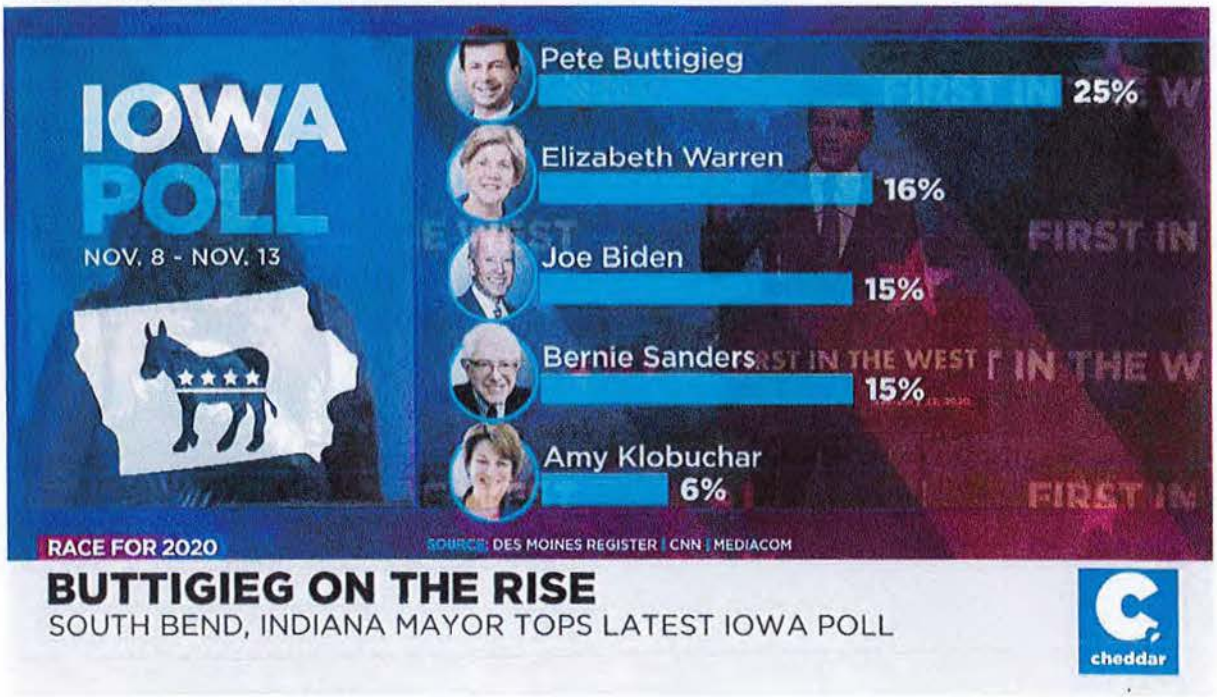
The boy, 15, and his sister, 12, were alone about 2:30 p.m. when they heard glass breaking downstairs at the home in the 2600 block of Royal Place Court in northwest Harris County.

The boy went downstairs with the rifle and spotted the two burglars in the living room.

He fired several shots and struck one of the intruders, said Lt. Jeff Stauber with the Harris County Sheriff's Office.

"He was concerned with protecting his younger sister — that's exactly what he did," Stauber said.

Need 2 Know: Mayor Pete Surges in Iowa



The suspect who was shot -- identified as Kinzy Evans, 17, -- was struck several times by gunfire. Police said his accomplice was a 16-year-old who they would not identify because he is a juvenile.

Sheriff's investigators were tipped off when the suspected burglars quickly showed up at Methodist Willowbrook Hospital.

"Anytime you get a gunshot victim in the hospital, they're going to notify law enforcement," Stauber said.

Evans was taken by Life Flight helicopter to Memorial Hermann-The Texas Medical Center in unknown condition.

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Sheriff's deputies said the burglars came into the house after breaking out a window in the living room area.

"They left the same way they came in - through the broken window," Stauber said.

'A little shaken up'

Family members at the scene declined to comment about the incident.

"The main thing is that the kids are OK. They're a little shaken up," said a man who identified himself as the deputy constable's brother.

Neighbors said several homes in the area also have been broken into during the daylight hours.

"There have been a lot of robberies. It's good that they caught them," said Ushantha Kawmini, whose home down the street was burglarized about a month ago.

Break-in concerns

Another neighbor was concerned that the burglars would be brazen enough to break into a home belonging to a law enforcement officer.

"Now they're doing it to the police officers. What about regular people?" said the neighbor.

She identified herself only as Mary because she feared retaliation from other burglars.

"I'm sure they (the suspects) have got friends," the neighbor said.

The two have been charged with burglary of a habitation, officials said.

mike.glenn@chron.com

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EXHIBIT "7"

The Philadelphia Inquirer

Unlimited Access Log In

Elkins Park man killed after forcing his way into apartment

by Sam Wood, PHILLY.COM, Posted: April 22, 2013

An Elkins Park man was killed late Friday after he forced his way into a stranger's apartment in Cheltenham Township.

Jasper Brisbon, 32, wandered up to a couple late Friday at the Lynnewood Apartments as the pair spoke outside their unit. Brisbon, they told police, appeared to be on drugs. He stared at the pair for several minutes before the couple decided to go into their apartment, police said.

But as they entered their home Brisbon jumped between them, forcing his way in.

The male of the couple ran to get a semi-automatic AR-15 rifle and insisted Brisbon leave. Brisbon refused. Instead, as the man yelled "Stop! Stop Stop!" Brisbon moved menacingly toward the man, police said.

The man fired a shot striking Brisbon in the torso and immediately called 911, police said.

An ambulance rushed Brisbon to Abington Memorial Hospital where doctors pronounced him dead. According to court records, Brisbon was awaiting trial on a charge of aggravated assault stemming from an incident in December.

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Police said the residents of the apartment were cooperating with police, did not know Brisbon and that the AR-15 was legally purchased.

Contact Sam Wood at 215-854-2796, @samwoodiii or samwood@phillynews.com

Posted: April 22, 2013 - 1:46 PM
Sam Wood, PHILLY.COM

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EXHIBIT "8"

https://www.tulsaworld.com/communities/wagoner/news/shooting-deemed-justifiable-authorities-say-zach-peters-acted-lawfully-when/article_ad51c988-72d3-556f-be54-6c9404a5fbab.html

Shooting deemed justifiable: Authorities say Zach Peters acted lawfully when he shot, killed three intruders

By JOSH ALLEN Staff Writer Apr 3, 2017

1 of 3

First Assistant District Attorney Jack Thorp told reporters Zach Peters acted "lawfully," within "his rights as an Oklahoma citizen," when he shot and killed three masked intruders with an AR-15 inside his home after they broke in on Monday, March 27. JOSH ALLEN/AMERICAN-TRIBUNE

Related content

Audio: Listen to edited version of audio of the 911 call

Alleged getaway driver in home invasion triple homicide reportedly knew man who shot 3 teens

VIDEO: 911 call released: Man who fired AR-15 on teen intruders tells dispatcher 'I shot two of them'

The latest: Friends in disbelief over deaths of three teens during home-invasion

Woman arrested after Broken Arrow-area man fatally shoots three intruders

Wagoner County officials said Monday the 23-year-old who shot and killed three masked intruders inside his home on March 27 acted justifiably and would not be charged with any crime.

At a press conference on Monday, First Assistant District Attorney Jack Thorp read an official letter from the DA's office, which said Peters "acted in accordance with his rights as an Oklahoma citizen."

The DA's office sent the official letter declining to prosecute or pursue any charges against Peters to the Wagoner County Sheriff's Office on Monday, April 3.

"Upon my review of his interview, it appears that he (Peters) was in fear for his life as he perceived the intruders and discharged his weapon at the intruders," District Attorney Brian Kuester states in the letter.

Kuester concludes Peters acted in accordance with the Oklahoma statue entitled Physical or Deadly Force Against Intruder (21 O.S. 1289.25).

"My deputies have worked tirelessly on this case ever since it happened to make sure we do a good job," Wagoner County Sheriff Chris Elliott said Monday. "They've investigated this meticulously, diligently, and we've looked at every piece of evidence."

Thorp said at Monday's press conference that Elizabeth Marie Rodriguez, 21, who was arrested for her involvement in the home invasion and subsequent deaths, has officially been charged with three counts of first-degree murder by the DA's office.

The range of punishment for murder in the first degree, Thorp said, includes three possible punishments; death, life without the possibility of parole or life.

She also faces a first-degree burglary charge and a second degree burglary charge, according to court records.

"Like every other jurisdiction in the country, we too have seen burglaries ... an increased number of burglaries happening in Wagoner County," Elliott said. "We are working diligently with other law enforcement agencies and the community to try and thwart these burglaries."

Rodriguez was arrested after she turned herself in to authorities shortly following the home invasion and shooting. She stated to investigators that she had "planned the robbery and drove the vehicle," according to authorities.

On Thursday, she told reporters in an interview from the jail that she was sorry for her part in the crime, claiming she did not plan to kill any of them but did admit to her part in the robbery attempt.

Jaykob Woodriff, 16, Jacob Redfearn, 17, and Maxwell Cook, 19, were wearing all-black and masks when they broke into Peters' home on Monday, March 27 around noon.

After hearing loud noises that woke Peters, who was at the home alone at the time, he encountered the three intruders inside his home. Armed with an AR-15 assault rifle, Peters fired, killing all three.

Authorities said one was armed with brass knuckles and another had a knife.

"At the sheriff's office, we're very troubled by this. We don't want to see this in our county," Sheriff Elliott said. "But we support the right of our citizens ... the right to bear arms and to defend their homes in this county."

"In this such, we feel strongly that that's what took place here," he continued. "We don't want to see this type of thing in our county, obviously, but we are also in the United States and in a state that affords our citizens the right to defend themselves."

Within minutes of firing the shots, Peters called 911 and requested medical personnel for the wounded intruders, telling the dispatcher "one of 'em's shot bad."

"Our condolences are extended to the families (of Woodriff, Redfearn and Cook)" Thorp said on Monday.

Originally it was reported that Rodriguez may have personally known Peters, however, she confirmed to authorities last week that "she had no connection" with him, according to Deputy Nick Mahoney, spokesman for the sheriff's office.

After waiving her right to an attorney, Rodriguez told investigators Wednesday that "she did not know Zach Peters," but said she "indirectly became aware of Peters' father."

"She said she determined Peters had money and expensive belongings, and that was why she selected his home, to 'hit a lick,'" Mahoney said.

"Hit a lick," Mahoney explained, "is a term some criminals use to describe getting a significant amount of money in a short period of time."

An arrest affidavit had previously indicated that Rodriguez "had previous knowledge of the house and the homeowner."

After Peters shot the intruders, who had broken in through a back glass door, two of them died inside, while one made it out to the driveway before collapsing.

Rodriguez told investigators that, after she heard shots fired, the injured suspect who ran outside tried to get back into her vehicle, but she said she drove away, leaving him in the driveway, Mahoney said.

Rodriguez also told investigators that she and the three deceased suspects had went to the residence prior to the shooting and burglarized a spare apartment on the property. She said they then returned later to burglarize the main house, Mahoney said.

Another witness contacted authorities last week with alleged additional information regarding the home invasion, according to Mahoney.

"Investigators have made contact with her and are currently in the process of talking with her," Mahoney said last week.

Though specific details about what she knows about the case were not revealed, he said investigators were "taking her seriously."

"She is a witness, not a suspect," Mahoney clarified.

Her name is not being released at this time. At Monday's press conference, authorities did not comment on her involvement or the information she may have provided to investigators, but Sheriff Elliott said she was a juvenile.

"We're not going to release any information on that," Elliott said referring to the witness, who may have been in the back seat of the car that Rodriguez drove to the residence prior to the home invasion. "This case is still an open investigation."

Rodriguez will go before Associate District Judge Dennis Shook on April 5 for an initial appearance hearing.

MORE INFORMATION

Autopsy reveals drugs in two of three teens killed in Wagoner County home invasion

EXHIBIT "9"

Detailed Information Regarding Penetration Of .223 Ammunition

by R.K. Taubert

About the author: A recently retired FBI Agent with over 20 years experience in SWAT and Special Operations, he conducted extensive counter-terrorism and weapons research while in the Bureau.

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Close Quarter Battle Reputation

Several interesting but inconclusive articles examining the feasibility of the .223 caliber, or 5.56x45mm round, for CQB events, such as hostage rescue and narcotics raids, have recently been featured in a variety of firearms and police publications. However, for more than 20 years, conventional law enforcement wisdom generally held that the .223 in any configuration was a deeply penetrating round and, therefore, totally unsuited for CQB missions in the urban environment. Partly because of this erroneous, but long held perception, and other tactical factors, the pistol caliber submachine gun (SMG) eventually emerged as the primary shoulder "entry" weapon for the police and military SWAT teams.

Although new revelations about the .223 are beginning to slowly circulate throughout the Special Operations community, a number of law enforcement agencies are in the process of acquiring the next generation of "advanced" SMGs in 10mm and .40 S&W calibers. Could they and the public be better served by a .223 caliber weapons system and at less expense? Please read on and judge for yourself.

FBI Ballistic Tests

As a result of renewed law enforcement interest in the .223 round and in the newer weapons systems developed around it, the FBI recently subjected several various .223 caliber projectiles to 13 different ballistic tests and compared their performance to that of SMG-fired hollow point pistol bullets in 9mm, 10mm, and .40 S&W calibers.

Bottom Line: In every test, with the exception of soft body armor, which none of the SMG fired rounds defeated, the .223 penetrated less on average than any of the pistol bullets.

These tests were conducted by the FBI's Firearms Training Unit (FTU), at the request of the Bureau Tactical and Special Operations personnel. Located at the FBI academy in Quantico, VA, this is the same unit with the encouragement of forensic pathologist Dr. Martin Fackler and other ballistic experts, that dramatically advanced the testing of modern handgun rounds to estimate their wounding effectiveness and potential lethality. Ultimately, this entity confirmed that permanent crush cavities, or "wound-channels," and deep penetration were the primary factors for handgun-fired projectiles. The FTU further determined that under various target engagement circumstances, a depth of penetration in soft tissue of between 12 to 18 inches was required for a handgun bullet to be effective.

Equipment Employed / Rounds Tested

For these series of tests the following firearms, ammunition and equipment were employed:

• Sealed, match grade test barrel to determine 25 yard, 10-shot group accuracy and 20-round velocity potential.
• 20" barreled, M16A1 rifle to stabilize and test rounds ranging from 40 to 55 grains in weight.
• 20" barreled, M16A2 rifle to stabilize and test rounds ranging from 62 to 69 grains in weight.
• Oehler Model 85 chronograph.
• Ransom type rifle rest, with laser bore sighting.
• Numerous blocks of Kind and Knox 250-A, 10% gelatin, to simulate living tissue.
• Federal's 40-grain "Blitz" hollow point, 55-grain soft point and 69-grain hollow point; 9mm 147-grain Hydra-Shok, 10mm and .40 S&W 180-grain, jacketed hollow points.
• Winchester's 55- and 62-grain full metal case, NTO-military spec. rounds.

As indicated, both rifles were fired from a mechanical rest. Ten-shot groups and 20-round velocity tests were fired for each round. 13 penetration tests were conducted. 95 rounds were fired for each type of round tested. A total of 760 rounds were tested and recorded for this project.

Test Protocol
Tests 1-6:
Bare gelatin, heavy clothing, automobile sheet metal, wallboard, plywood, and vehicle windshield safety glass, were shot a distance of 10 feet from the muzzle. The vehicle safety glass was set at an angle of 45 degrees to the horizontal, with the line of bore of the rifle/SMG offset 15 degrees to the side resulting in a compound angle of impact for the bullet upon the glass, which simulates a shot directed at the driver of a car closely missing the shooter. Furthermore, the gelatin was covered with light clothing and set back 18 inches behind the glass. All gelatin blocks, with the exception of the body armor barrier, were set 18 inches behind each solid obstacle shot.

Tests 7-13:
All involved shots through heavy clothing, safety glass and bare gelatin at 50 to 100 yards, concluding with internal walls, external walls and body armor at 10 feet. Test eight however, involved safety glass at 20 yards, shot dead-on, without the 15 degree offset, to simulate a shot at a car's driver bearing down on the shooter.

For the connivance of the reader, test results are summarized in the following chart. Please note that the data displayed represents the average penetration of these rounds as measured in 10% ballistic gelatin (see tables 1 and 2).

Considering that the average person's torso is 9 inches thick, front to back, all the .223 rounds ranging in weight from 55 to 69 grains appear to be adequate performers on soft targets where frontal shots are involved. Although the majority of target engagements are frontal, profile shots can and do occur. A .223 round that is required to pass through an arm before entering the rib cage mat, upon striking bone, fragment, and while possibly shattering the appendage, would most likely not be successful in producing a sufficiently deep body cavity wound to be decisive. In this, as with any CQB encounter, "controlled pairs," or rapid-repeat hits may be

required to ensure target neutralization.

Defeating Ballistic Garments
Soft body armor appears to have little effect on the calibers ability to penetrate and actually seemed to enhance the 40-grain Blitz's depth of penetration in soft tissue.

From a law enforcement standpoint, the ability of the .223 caliber round to defeat soft body armor, military ballistic helmets and many ballistic shields is a "double-edged sword." The criminal use of body armor is rare, but increasing. Possessing the ability to penetrate and adversary's protective vest is obviously desirable. However, this round will also defeat law enforcement vests, so great care must be exercised in laying out and observing fields of fire in training and during operations. With this concern over potential fratricide in mind, voices have been raised in some quarters regarding this bilateral tactical attribute. A number of veteran officers strongly embrace The traditional concept that a department's duty rounds should not exceed the capabilities of their vests. Arguably, this is a sound approach for any law enforcement agency to take for its non-tactical response personnel. However, SWAT, because of its specialized missions, may be a different matter and this later concern, while important, should not dominate the rationale supporting weapons selection by highly competent tactical units.

Although it has been reported that less that 1% of all serious crimes involve long guns and less than 8% of long gun related crimes involve rifles, law enforcement is being confronted more frequently by criminals with weapons and munitions that are capable of defeating all but the heaviest ballistic protection. The FBI's Uniform Crime Reporting Section indicates, for example, that rifles were involved in 13% of the assaults on police officers during 1992. The incident a Waco, Texas, is a recent example of this problem. For forced entry teams, the need for higher levels of ballistic protection is essential.

For safe training of specialized law enforcement teams, the development of a lead-free, low penetration, short-range 5.56mm/.223 caliber training round that will (1) not penetrate ballistic vests and helmets, (2) destroy "shooting house" walls, (3) crater, or perforate steel-reactive targets, is extremely important. Fortunately, it appears that private industry is responding to these demands and such munitions are currently being developed.

Vehicle Interaction
With the exception of the full metal case and the 69-grain JHP rounds, it appears inadvisable to select lighter weight, soft or hollow point versions of this caliber when automobiles are likely to be engaged during planned raids and arrests. Penetration against automobile windshield safety glass is generally very poor and is only slightly better on sheet steel. Although terrorists from the insurgent New Peoples' Army were able to blast their way through an armored limousine in the Philippines and murder a highly regarded U.S. military official with concentrated M-16 rifle fire, the SMG-fired pistol round demonstrates at least a theoretical, if not practical, edge against such hardened targets.

Interestingly, while penetration on auto glass and sheet steel is marginal, .223 projectiles will readily perforate and breach mild steel such as standard pepper poppers, that pistol rounds will

only slightly dimple. However, very little of the .223's mass is retained, so after defeating mild steel, significant wound potential is severely diminished upon exit.

Barriers and Structures

The Bureau's research also suggests that common household barriers such as wallboard, plywood, internal and external walls are also better attacked with pistol rounds, or larger caliber battle rifles, if the objective is to "dig out" or neutralize people employing such object as cover or concealment. Although it is usually not advisable to fire at targets you can't see in urban settings, it is done and some subjects have been stopped in this manner. Conversely, the ability of some pistol rounds to penetrate barriers tested puts innocent bystanders and fellow team members at greater risk in CQB scenarios. If an operator misses the intended target, the .223 will generally have less wounding potential than some pistol rounds after passing through a wall or similar structure. The close range penetration tests conducted indicated that high velocity .223 rounds were initially unstable and may, depending on their construction, disintegrate when they strike an object that offers some resistance. When concrete, brick or macadam are struck at an angle at close range, .223 rounds tent to fragment or break up, and ricochets are generally less hazardous. The .223 could consequently be considered safer for urban street engagements, because of its inherent frangibility within the cross-compartments created by street environments. In other words, in most shootings, the round would probably strike something, hopefully a hard object, break up and quickly end its potentially lethal odyssey.

As a point of interest, the rifled shotgun slug, while not possessing the .223's flat trajectory, is still capable of attaining a maximum range of 900 yards. This fact illustrates that any errant law enforcement round regardless of caliber, or maximum range, is potentially dangerous to the community.

.223 Wounding Characteristics

Ballisticians and Forensic professionals familiar with gunshot injuries generally agree that high velocity projectiles of the .223 genre produce wounds in soft tissue out of proportion to their calibers, i.e. bullet diameter. This phenomenon is primarily attributed to the synergistic effects of temporary stretch cavity (as opposed to the relatively lower velocity stretching which typifies most pistol rounds) and bullet fragmentation on living tissue.

Distinguished forensic pathologist Dr. Martin L. Fackler, observed when he was conducting wound research for the U.S. Army several years ago ("Wounding Patterns of Military Rifles," International Defense Review, Volume 22, January, 1989), that in tissue simulants such as ballistic gelatin, , the 55-grain, M-193 military bullet lost stability, yawed (turned sideways) 90 degrees, flattened and broke at the cannelure (groove around the bullet into which the cartridge case is crimped) after penetrating about four to five inches. The forward portion of the bullet generally remained in one piece, accounting for 60% of its originally weight. The rear, or base portion of the bullet, broke into numerous fragments that may also penetrate tissue up to a depth of three inches. Dr. Fackler also noted that a relatively large stretch cavity also occurred, violently stretching and weakening tissue surrounding the primary wound channel and its effect was augmented by tissue perforation and further weakening by numerous fragments. An enlarged permanent cavity significantly larger than the bullet diameter resulted by severing

and detaching tissue pieces. However, as the range increases, the degree of bullet fragmentation and temporary cavitation decreases because terminal velocity diminishes. At 100 meters, Fackler observed that the bullet, upon penetrating tissue, breaks at the cannelure, forming two large fragments. However, beyond 200 meters, it no longer looses its integrity, although flattening continues to somewhat occur out to 400 meters.

In his study, Fackler remarked that in abdominal shots, "There will be increased tissue disruption (beyond the bullet diameter wound channel) from the synergistic effect of the temporary cavitation acting on tissue that has been weakened by bullet fragmentation. Instead of observing a hole consistent with the size of the bullet in hollow organs such as the intestines, we typically find a void left by missing tissue up to three inches in diameter." However, "unless a extremity (peripheral hit) is sufficiently thick like a thigh, or the bullet does not strike bone, the round may pass through an arm for instance, causing little damage from a puncture type wound."

Regarding NATO's 62-grain FMC M-855 (SS109) .223 caliber round Dr. Fackler observed that the bullet produces a wound profile similar to the M-193's, particularly where abdominal or thigh wounds were involved. Other sources indicate this bullet, with a [steel] core penetrator, exhibits 10% greater fragmentation and retains its ability to fragment at slightly longer ranges than the 55-grain military bullet. *[Keep in mind that the M-855 round, because of its steel core, has a length comparable to a 73-grain lead core bullet, and should be shot out of longer barrels (18+ inches) with tighter twists in order to retain good practical accuracy]*

Hollow and soft point bullets in this caliber can be expected to upset and fragment much sooner and more consistently that full metal case (FMC) bullets. In light of this more consistent performance, Fackler recommends hollow points over "ball" ammunition for police use, providing the HP bullet penetrates deep enough to disrupt something vital. However, in his candid opinion the most effective round currently available for law enforcement operations is the 64-grain, Winchester-Western, pointed soft point, currently referred to as "Power Point". This bullet has a heavier jacket than those tested by the FBI, resists hyper-fragmentation, penetrates well and "expands like a .30 caliber rifle round." Subsequent FBI tests of this round fired from Colt's 14.5-inch barreled Mk-IV carbine bore this out and bullet expansion was "impressive."

Dr. Fackler also advised that the synergistic effects of fragmentation and high velocity temporary cavitation cannot be scientifically measured in gelatin because that medium is too elastic. More Accurate results can be obtained by examination of fresh animal tissue soon after it is shot.

Range Limitations

Federal's Blitz round, because of its very high velocity, low weight and frangible construction, demonstrated extremely poor overall penetration in the FBI tests. If it is considered for CQB use, it should be fired from ultra-short barreled weapons, such as Heckler & Koch's, 8.85-inch barreled HK-53. Shorter barrels would bleed off excessive velocity to reliably fragment and produce good temporary stretch cavities at close range. Because of this velocity loss, the maximum effective range on personnel would most likely be 100 yards or less. To ensure that

.223 caliber bullets perform as previously described by Dr. Fackler, it appears that a minimum target striking velocity of 2,500 feet per second (fps) is required. Bullets over 50 grains in weight may not accelerate to this critical velocity in barrels less than 10 to 11 inches in length. Tactical teams should therefore carefully select the appropriate barrel length for their CQB weapon, to ensure that the round they employ will deliver minimum terminal ballistic velocities at the ranges desired and balance it against maneuverability requirements *[Also remember that dr. Fackler's data is based on the FMJ ball ammo results and that hollow point ammunition will be as effective with lower velocities]*
"Bull pup" configured carbines, such as the Steyr AUG, enjoy a distinct advantage here, because they retain long barrel lengths with relatively compact overall dimensions and are as flexible as an SMG in confined areas. In fact, a Steyr AUG compares favorably to H&K's MP5-SD SMG in overall length and with a 16-inch barrel, is only an inch longer overall than a 14-inch barreled Remington 870 raid shotgun.

[At this point, Mr. Taubert's article goes into extreme range shooting and barrel length. His suggestion is to have a barrel at least 14-18 inches long for CQB use as this allows for useful terminal ballistics at around 150-200 yards with 60+ grain bullets. I disagree with Mr. Taubert's point of view for the simple fact that we are discussing Close Quarters firearms, and not long range sniping firearms. In these instances, a barrel length of 6-10 inches is practical for entry team use as it allows for greater maneuverabillty and acceptable ballistic performance with 55-grain hollow point ammunition. Also, a lot of Mr. Taubert's information is based off of Dr. Fackler's research using FMJ ammunition. Most of my information is based upon real-world shootings and actual testing of commercial ammunition in short barreled firearms designed for this application.]

A recent review of major U.S. ammunition manufacturers' pricing indicates that commercially loaded .223 ammunition is slightly less expensive than similarly configured premium hollow point pistol ammunition. With millions of rounds of surplus military .223 ammunition possibly available to law enforcement, because of numerous base closures and through low cost channels, training with this caliber could be highly cost effective.

The .223 carbine is able to satisfy both close and intermediate range requirements and presents a good argument for eliminating the necessity for the law enforcement SMG. This one-gun concept will not only stretch departmental funds in this respect and reduce training requirements, but in some cases the difference in price between a single-fire carbine and a select-fire SMG often amounts to several hundreds of dollars. The need for full automatic fire with the M-16 carbine is debatable and two single-fire versions can often be purchased by police agencies for the cost of one top-of-the-line SMG. *[This is a fact that I have been preaching for a long time. Another fact that Mr. Taubert does not touch on is that the M-16/AR-15 family of rifles use a split receiver system that allows the rapid exchange of differently configured uppers. This allows one officer to carry a 16" CAR-15 in is patrol vehicle as his secondary firearm, and a 6" upper receiver unit in his trunk for tactical entry use]*

As a result of contemporary research, such as that conducted by the first FBI's Wound Ballistic Workshop, some law enforcement agencies have expressed the opinion that concerns about

pistol bullet over penetration were exaggerated. They cite the toughness and flexibility of the human skin in resisting bullet exit and the fact that police officers historically missed their intended targets most of the time in actual shootings. While poor hit ratios and over penetration may not be critical to some for individual gun battles that occur in the street, these marksmanship realities can become real planning and safety concerns when establishing fields of fire during raids, hostage rescues and other tactical operations.

Typically, these operations involve confined areas, where officers occupy positions in close proximity to each other. In close combat operations, every round expended must be accounted for. It is imperative that that rounds fired hit their intended targets and not pass through them to endanger other officers and innocent bystanders. If misses occur, it is desirable that once the stray round strikes a solid object, it expends its energy and disintegrates into relatively harmless pieces. If deep, barrier penetration is necessary, special ammunition or projectiles *[or weapons]* possessing this attribute can be selected.

Shootout Results

It was late in the morning on a hot July day in 1993, when members of a major Western cities' police tactical unit executed a search and arrest warrants in connection with a narcotics raid on a "biker residence." The tactical officers were armed with Sig-Sauer 9mm P-226 pistols and 16-inch barreled Steyr AUG .223 caliber carbines with optical sights. The Steyr, loaded per SOP, with 28 Federal 55-grain HP rounds was the primary entry weapon for several officers on the team. Steyr carbines were selected for this raid, because the team leaders anticipated shots "out to 25 yards."

The team was required to knock and announce, effectively negating the element of surprise. Approximately 92 seconds into the raid, the officer involved in the following shooting incident was in the process of cuffing a subject when two Rottweiler dogs attacked. While the other officers were dealing with the dogs by employing OC aerosol, a 6-foot-tall, 201-pound subject, high on "speed", suddenly burst into the room occupied by the police through a locked door and leveled a 9mm pistol at one of the tactical officers. The distance between the adversaries was approximately 20 feet. With his back essentially to the subject, the involved officer acquired the threat in his peripheral vision, whirled around and commanded, "Police, put your hands up," while clearing the Steyr's safety and mounting the weapon. The subject then shifted his pistol, held by one hand in a bladed stance, towards the reacting officer. In "less than a second" the subject's hostile action was countered by the officer by firing two fast, sighted, tightly controlled pairs, for a total of four rounds at the subject. Rounds one and two missed, but were contained by the structure. Round three connected, penetrated and remained in the subject. Round four grazed his upper chest and exited as he spun and fell. Round three was quickly effective. The collapsing subject ceased all motor movement and expired within 60 seconds. The involved officer was aware of each round fired and simultaneously moved to cover. Tactical members were then confronted by a female accomplice armed with a double-barreled shotgun. However, the involved officer also successfully negotiated her surrender. All .223 rounds that missed the subject struck parts of the building's internal structure, fragmented and remained inside.

When the autopsy was performed, the forensic pathologist was amazed at the degree of

internal devastation caused b the .223 round. There was a two-inch void of tissue in the chest, with a literal "snowstorm" of bullet fragments and secondary bone fragments throughout the upper left chest area. The round struck the subject 11 inches below the top of his head and inflicted the following wounds:

- Penetrated the top of the left lung, left carotid and subclavian arteries.
- The collar bone and first rib were broken. Cavity measured 5x6 centimeters.

What is significant about this "instant one-shot stop" was that the round did not strike the subject at the most effective or optimum angle and did not involve any direct contact with the heart or central nervous system. It is doubtful that this type o terminal ballistic performance could have been achieved by any of the police service pistol/SMG rounds currently in use.

Although this is only one incident and could be an aberration, police tactical teams require this type of terminal ballistic performance to enhance their safety and survival particularly during CQB engagements, when criminals most often enjoy a positional and action-versus-reaction time advantage.

The FBI study clearly demonstrates the following: (1) that .223 rounds on average, penetrate less than the hollow point pistol rounds evaluated, (2) concern for over penetration of the .223 round, at close range, has been greatly exaggerated, (3) with the exception of soft ballistic garment penetration, the .223 round appears to be relatively safer for employment in CQB events than the hollow point bullets tested.

Observations and experience indicate that high velocity rifle bullets generally produce more serious wounds in tissue than pistol bullets, regardless of range.

Violent temporary cavitation, in conjunction with bullet yaw and fragmentation, are essential wounding components for high velocity rifle projectiles.

As range and bullet stability increases and velocity decreases, rifle caliber wound severity decreases and penetration increases.

Where soft target penetration requirements exist and over penetration concerns are prevalent, police should employ hollow point bullets in this caliber.

Full metal case or heavier soft point bullets may be more appropriate for hard target penetration in this caliber.

The .223 and the current carbine systems available for it are highly versatile and well suited for urban as well as rural operations. However, because of enhanced terminal ballistic performance, rifles are recommended if targets are expected to be engaged beyond 200 meters. *[The .223 round itself should not be used in law enforcement applications at any ranges outside of 300 yards/meters. Long distance shots should be left to highly trained sniper units using medium caliber center fire rifle ammunition. e.g. .308/7.62 NATO. Also, the majority of*

police sniper shots occur within 100 yards/meters.]

The ability to train with one shoulder weapon and caliber for both CQB and open air options simplifies logistics and training, makes training more effective and is cost effective. *[Again, one upper for general, secondary weapon usage, and one upper for CQB]*

Under current pricing, police agencies can realize significant savings by purchasing single-fire carbines instead of select-fire machine guns.

Because of the "political" considerations and perhaps the concern over the possibility of more serious injuries caused by errant "friendly fire," the highly versatile and powerful .223 carbine may not be a suitable CQB firearm for some departments. However, if the above factors are not involved, the .223 carbine is an extremely flexible and effective anti-personnel weapon with, in many cases, handling characteristics actually superior to many contemporary SMGs. It offers the advantages of reduced logistics, lower costs and reduced training time when compared to agencies employing multiple specialty weapons. The caliber in its current offering is far from perfect, but in spite of some shortcomings, I anticipate that in the future it will eventually replace pistol caliber SMGs in many police departments and law enforcement agencies.

It has been a recently growing trend to see law enforcement departments exchanging their issue shotguns for the police carbine in 9mm, .40 S&W, and .45 ACP. And many departments have found that these carbines do not serve their needs as they expected. However, they are fearful to switch, or in many cases purchase, .223 carbines because "they will go through 10 people and 3 city blocks before they stop!" As you can see, this is not the case, and is in fact, completely the opposite. I hope that this article helps to clear all false truths and misnomers about this very versatile and serviceable cartridge.

ALL OF THE INFORMATION IN THIS ARTICLE IS BASED UPON THE PERSONAL EXPERIENCE OF INDIVIDUALS WHO MAY BE USING SPECIAL TOOLS, PRODUCTS, EQUIPMENT AND COMPONENTS UNDER PARTICULAR CONDITIONS AND CIRCUMSTANCES, SOME OR ALL OF WHICH MAY NOT BE REPORTED, NOR OTHERWISE VERIFIED IN THIS ARTICLE. NOTHING HEREIN IS INTENDED TO CONSTITUTE A MANUAL FOR THE USE OF ANY PRODUCT OR THE CARRYING OUT OF ANY PROCEDURE OR PROCESS. THE WRITERS, EDITORS, AND PUBLISHERS OF THIS ARTICLE ACCEPT NO RESPONSIBILITY FOR ANY LIABILITY, INJURIES OR DAMAGES ARISING OUT OF ANY PERSON'S ATTEMPT TO RELY UPON ANY INFORMATION CONTAINED HEREIN.

EXHIBIT "10"

.223 / 5.56 Penetration Tests vs.

.40 S&W and 12 ga. Slug

Overview

The research on the penetration of .223 ammunition has been completed. In an effort to make research more meaningful, testing consisted of handgun and shotgun ammunition in the same testing medium. The final results were that the .223 demonstrated less penetration capability than the 12 gauge slug and the .40S&W [handgun round].

Testing Medium

Type 250A Ordnance Gelatin was cast into blocks, 6"x6"x16". The process used is that which is recommended by Col. M. Fackler, Director of the US Army Wound Ballistics Laboratory. This is a 10% mixture, 1Kg of gelatin to 9000ml of H2O. This type of gelatin accurately simulates human body tissue in terms of bullet penetration.

A small piece of wall was constructed to duplicate the standard exterior walls found in [the Pacific Northwest] area. This piece of wall was sheeted with ½" wafer board, covered with a 2nd piece of ½" wafer board to simulate siding. This wall was built using a 2x4 frame and finished on the inside with ½" sheet rock. The interior [of the wall] was lined with fiberglass insulation.

Weapons Used

CAR-15, cal .223 Rem./5.56x45mm with a 16" barrel.
Glock M22, cal .40S&W.
Remington 870, 12 ga.

Ammunition Used

Federal .223 Remington, 55 grain HP.
Winchester .40S&W, 180 grain HP.
Federal 12 ga., 2 ¾", rifled slug.

Procedure
All rounds were fired from a distance of 12 feet. After each round was fired, its penetration was recorded and bullet performance noted. After a bullet was fired into the [bare] gelatin, another bullet of the same type was fired through the section of wall and into the gelatin. This was done in order to determine its penetration potential in the event a stray round were to hit the wall of a building.

Results

Caliber	Testing medium	Penetration	Condition of bullet
.223 Rem.	gelatin only	9.5"	two pieces
.223 Rem.	wall & gelatin	5.5" *	fragmented
.40S&W	gelatin only	13.5"	mushroomed
.40S&W	wall & gelatin	22" *	no deformation
.40S&W	wall & gelatin	22" *	no deformation
.40S&W	wall & gelatin	19.5" *	slight deformation
12 ga.	wall & gelatin	27.5"	mushroomed

* these measurements do not include penetration of the 6" wall.
CCI Gold Dot.

Summary
The 55 grain HP .223 has less penetration than any of the other ammunition tested. Based on the results of this testing, there appears to be no basis for concern regarding the over penetration of the .223 [HP] round. In fact, it seems even safer in this regard than .40 S&W handgun ammunition.

The hollow point cavity in the .40S&W round filled with material when shot through the wall. This caused [these bullets] to fail to expand when they entered the gelatin. As a result, they penetrated 8.5" farther than when shot directly into the gelatin.

When the .223 [HP] was shot through he wall it began to fragment and as a result penetrated the gelatin only 5.5".

Because the .223 [HP] begins to break up on impact, it has less potential for damage or injury than the 12 ga. in the event of a ricochet. The .223 [HP] is obviously safer in an urban environment than the 12 ga. with slugs or buckshot.

Additional testing conducted proved that the .223 would penetrate a car door or glass. The .223 rounds fired into windshields began to break up after entering the glass and did not retain much energy. In most cases these rounds split in two.

The Call-Out Bag

by Gunsite Training Center Staff

A Comparison of .223 Penetration vs. Handgun Calibers

The .223 shoulder-fired weapon systems (e.g., AUG, CAR) have received some recent interest as indoor tactical weapons for special operations teams. increased power, longer effective distances, and greater tactical flexibility have been cited as positive factors of the .223 systems over 9me SMG-type weapon systems. Other authors (Fackler, et all) have postulated greater capability for tissue damage and incapacitation of the .223 rifle cartridge over the 9mm projectile fired from handguns or SMGs. Negative considerations for the indoor use of the .223 weapon systems focus on over-penetration of projectiles and possible subsequent liability.

Our effort was made to compare the penetration characteristics of various .223 bullets to various handgun bullets fired into test barriers representing indoor and outdoor building walls. We felt that the following test might mimic shots fired from inside a building, through the internal rooms, out the exterior wall, and into another similar building nearby. A comparison of wall penetration effects by a variety of handgun calibers versus the effects of .223 FMJ ball, .223 SP, and .223 HP, under these same conditions, was expected to substantiate other findings reported or provide new information to those interested in this area of ballistics.

Two interior test walls were constructed using a wood 2x4 frame with standard drywall board attached to both sides. Two exterior test walls were made using wooden frames with drywall board attached to one side and exterior grade T1-11 wooden siding attached on the other (exterior) side. R-19 fiberglass insulation batting (Dow Coming) was stapled inside the two exterior test wails. To maintain test medium consistency, no wooden cross beams, electrical

fixtures, conduits, or electrical wiring were placed in any of the test walls.

The test walls were placed in the following sequence to mimic shots fired from. inside a building, through two internal rooms, out the building, and into another similarly constructed building:

A. Interior wall #1 was placed 8 feet from the shooting position.

B. Interior wail #2 was placed 8 feet beyond interior wall #1.

C. Exterior wall #1 was placed 8 feet beyond interior wail #2. (Exterior side facing away from the shooter.)

D. Exterior wall #2 was placed 15 feet beyond exterior wall #1. (Exterior side facing toward the shooter.)

All calibers tested were fired from a position 8 feet in front of interior wall #I, so the bullet trajectory would travel in sequence through each of the succeeding test walls. Each caliber tested was chronographed and all firing results were videotaped for archive files.

The following results were obtained:

1. All handgun calibers exited exterior wall #1. This means they exited the "house" after passing through two interior "rooms," then entered another "house" to impact into the berm. The handgun caliber which demonstrated the least penetration was .22 LR Lightning.
2. The only calibers which did NOT exit the "house" were .223 (5.56) soft point and hollow point loaded bullets.
3. All projectiles demonstrated directional changes in their trajectory after passing through the first interior wall. The greatest directional changes (10 inches+ yaw) were shown by 9mm and .40 S&W projectiles.
4. Directional changes in bullet trajectory appeared to increase in magnitude with each test

wall the projectile passed through.

The penetration characteristics of projectiles have long been believed to be primarily determined by a relationship of bullet mass, bullet shape, bullet velocity, and bullet construction. The penetration differences of .223 soft point and hollow point projectiles versus the effects from .223 full metal jacket may be due to differences in bullet construction. The differential effects on penetration due to bullet construction shown with the .223 are different and appear greater in magnitude than those encountered when handgun bullet construction is modified. Since .223 projectile velocities are threefold greater than those of handgun projectiles, the increased magnitude of bullet velocity might account for the differences in bullet trajectory and penetration distance. The deviated trajectory of hollow point handgun projectiles was also greater than the deviation found with full metal jacketed handgun bullets; again, possibly due to contact point deformation. The preceding study more than ever identifies the need for a personal emphasis of marksmanship and tactical fundamentals. The shooter is responsible for the bullets that go downrange. Practice, be aware, manage your trigger, and watch your front sight!

Many thanks to Jack Furr, Ron Benson, Pete Wright, and Seth Nadel, U.S. Customs, for conducting and reporting this test.

.22 LR 40 gr Lightning	899 fps	Captured in exterior wall #2
9mm 147gr Win JHP	948 fps	Captured in exterior wall #2
9mm 147 gr Win JHP	1004 fps	Exited exterior wall #2
.40 S&W 180 gr FMJ	941 fps	Exited exterior wall #2
.40 S&W 180 gr Black Talon JHP	981 fps	Exited exterior wall #2
.45 ACP 230 gr Win FMJ	867 fps	Captured in exterior wall #2
.45 ACP 230 gr HydraShok JHP	851 fps	Exited exterior wall #2
.223 (5.56) 55 gr Fed FMJ	2950 fps	Exited exterior wall #2
.223 (5.56) 55 gr Rem SP	3019 fps	Captured in exterior wall #2
.223 (5.56) 55 gr Fed JHP	3012 fps	Captured in exterior wall #2

ALL OF THE INFORMATION IN THIS ARTICLE IS BASED UPON THE PERSONAL EXPERIENCE OF INDIVIDUALS WHO MAY BE USING SPECIAL TOOLS, PRODUCTS, EQUIPMENT AND COMPONENTS UNDER PARTICULAR CONDITIONS AND CIRCUMSTANCES, SOME OR ALL OF WHICH MAY NOT BE REPORTED, NOR OTHERWISE VERIFIED IN THIS ARTICLE. NOTHING HEREIN IS INTENDED TO CONSTITUTE A MANUAL FOR THE USE OF ANY PRODUCT OR THE CARRYING OUT OF ANY PROCEDURE OR PROCESS.

THE WRITERS, EDITORS, AND PUBLISHERS OF THIS ARTICLE ACCEPT NO RESPONSIBILITY FOR ANY LIABILITY, INJURIES OR DAMAGES ARISING OUT OF ANY PERSON'S ATTEMPT TO RELY UPON ANY INFORMATION CONTAINED HEREIN.

EXHIBIT "11"

Why "High Powered" 5.56 NATO/.223 AR-15 Ammo is Safer For Home Defense (FBI overpenetration testing)

By **Caleb** - Jul 14, 2016

6
Shares

If you listen to the mainstream media, then the standard 5.56 NATO/.223 Remington cartridges the AR-15 shoots are "high powered assault weapon" rounds that have no place in civilian hands.

(I hope you are catching the sarcasm as I'm pouring it on)

Yet, as we've discussed previously, the AR-15 is a GREAT choice for Home Defense.

And what's even more amazing, is that it may be one of the "safest" bullets you can shoot from a gun in a home when it comes to overpenetration concerns.

Home Defense and The Risks of Over-Penetration

The truth is that almost everyone, once they start thinking about home defense, starts to think about overpenetration.

In other words: what if I miss the bad guy? Where will the bullet go? Is it going to go through a wall and hit other members of my family?

That's what they call "over penetration".

The truth is: almost any round that will penetrate deeply enough to hit vital organs in the human body (and stop an attacker) will penetrate typical interior home walls.

That's because most walls are made up of little more than a couple 2×4 wood studs and drywall on each side. And maybe some insulation depending on the part of the country.

Although this fact remains, that ANY adequate self-defense round will penetrate a wall because you need it to penetrate human flesh, we still want to limit our penetration as much as possible.

Shotgun VS Pistol VS Rifle Home Defense Penetration

Your typical choices for home defense weapons are a pistol, the shotgun, or a rifle.

Now, when most people think of overpenetration risks they assume that pistol bullets would penetrate less than the rifle or shotgun.

That's actually dead wrong.

Pistol bullets consistently penetrate the most.

Shotgun is next.

And rifles, at least the so-called "high powered assault weapon" AR-15 in 5.56 NATO/.223 Rem penetrates the LEAST.

FBI and Independent Testing Has Consistently Shown .223/5.56 NATO Fired From AR-15's Do Not Over Penetrate More Than Pistol/Shotgun

First up is this older article by R.K. Taubert, a retired FBI agent with over 20 years experience who conducted extensive counter-terrorism and weapons research while with the Bureau.

To quote Mr Taubert, (emphasis mine) *" ... As a result of renewed law enforcement interest in the .223 round and in the newer weapons systems developed around it, the FBI recently subjected several various .223 caliber projectiles to 13 different ballistic tests and compared their performance to that of SMG-fired hollow point pistol bullets in 9mm, 10mm, and .40 S&W calibers.*

"Bottom Line: ***In every test, with the exception of soft body armor, which none of the SMG fired rounds defeated, the .223 penetrated less on average than any of the pistol bullets.***"

And again on this page, there is testing by Gunsite Training Center Staff which found in a comparison of handgun calibers (9mm, .40 S&W, .22 LR, .45 ACP), and rifle caliber .223 (5.56) that:

"The only calibers which did NOT exit the "house" were .223 (5.56) soft point and hollow point loaded bullets."

Then there are the "Box O' Truth" tests with great pictures where they found, *"... Common pistol rounds easily penetrated all 4 walls spaced out at room distances ... The 12 gauge shotgun went through 4 walls like they were not there ... The 5.56 rounds deviated greatly from the original flight path once they started tumbling. This occurred after the second wall."*

And this drywall testing concluded, *"Moving away from rifle rounds takes us from fascinating discoveries into the realm of mythbusting. Handgun rounds, for instance, may penetrate less than rifle rounds–but only if the rifle rounds in question are full-power ball ammo.* ***The relatively slow speed and heavy weight of handgun bullets make them a poor choice for limiting interior wall penetration, which is why professional door-kicker types have abandoned pistol-caliber submachineguns in favor of .223 carbines."***

And this interesting test at outdoorub found *"The pistol rounds were seemingly unaffected by the drywall and/or wood barriers. There was no observable deviation or fragmentation of the 9mm projectiles. You'd be safe counting on a pistol round to keep going, and going, and going ... Even though the .223 rounds start with a lot more energy, they tend to lose it quickly when encountering the barriers in this test ...* ***Moral of the story? Don't trust the mainstream media. Those high-powered, so called "assault weapons" may be safer than your average pistol for inside-the-home defense."***

(NOTE: many of the rounds tested at outdoohub are found on the "approved list" of AR-15 self-defense ammo here.)

When It Comes To Home Defense, The AR-15 Rifle Ammo Is Less Likely To Over-Penetrate

The truth is that AR-15 ammo is less likely to overpenetrate. Yet it is highly effective at stopping threats. Sounds like a good choice for Home Defense to me.

Please Note: that all this "rifle vs shotgun vs pistol" testing is comparing the AR-15 in standard 5.56/.223 to the pistols and shotguns ...

That means that "other rifles" such as AK-47's in 7.62×39, .308 hunting rifles or AR-10 style semi-autos, etc are not included in these tests. THOSE rifle bullets would most likely penetrate much, much further because they are bigger, heavier bullets (though I'm not aware of much actual testing).

The bottom line to remember in all of this though is to still be aware of your target and what is around/beyond it because ALL bullets that will penetrate deep enough to stop an attacker will still penetrate at least one interior wall. And even a bullet, like the .223 that tends to lose steam and deviate after a wall or two can still be deadly to your family/innocents.

Check out these other articles for more on excellent performing 5.56 NATO/.223 ammo:

- The "Approved List" Of 5.56 NATO/.223 Rem Self-Defense/Duty Ammo

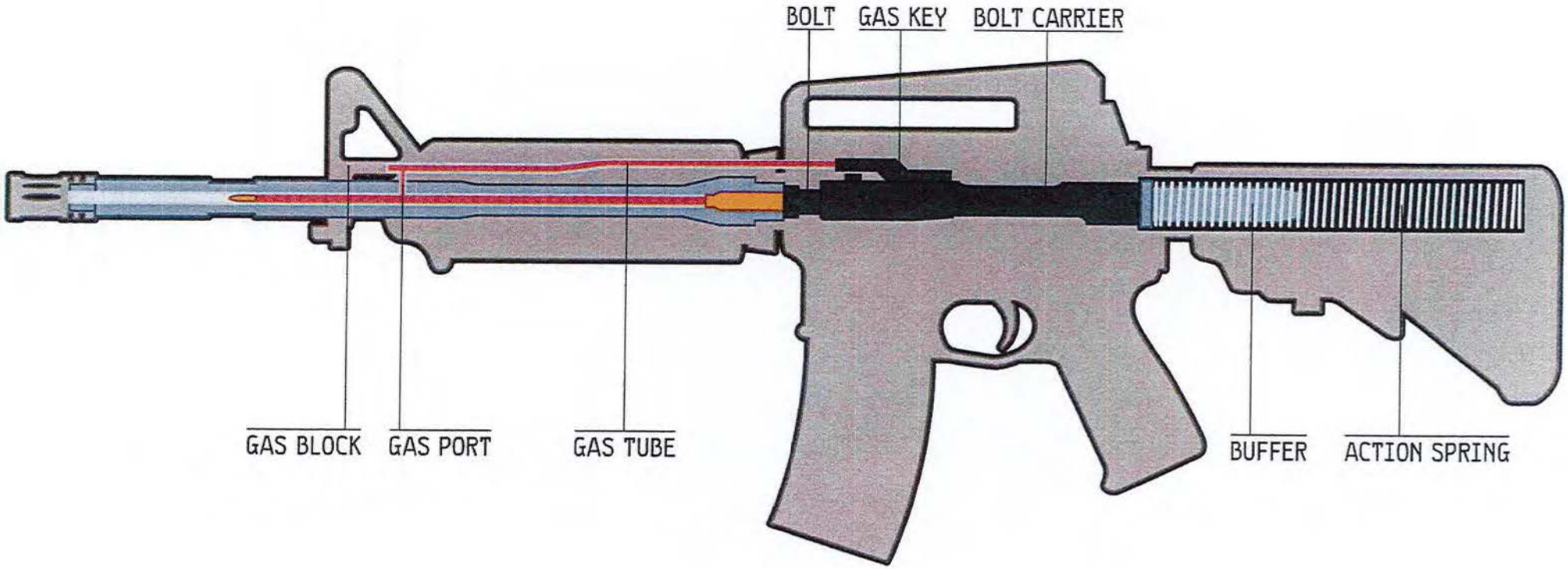
- The Best Home Defense Ammo For Your AR-15?

Anyways, I hope this clears up some misconceptions when it comes to choosing home defense ammo (or a gun) that will be least likely to penetrate.

Caleb

Caleb Lee is the #1 best-selling author of "Concealed Carry 101" and founder of PreparedGunOwners.com. He is a civilian (no law enforcement or military experience) who shares information about self-defense and becoming more self-reliant. He's a 1st degree black belt in Taekwondo, NRA Certified Basic Pistol & Personal Protection Inside The Home Instructor, Concealed Carry Academy Instructor certified & also a graduate of the Rangermaster firearms instructor course. He's also the author of numerous online courses including the UndergroundAssaultRifle.com course.

EXHIBIT "12"



RECOILWEB.COM

EXHIBIT "13"

MidwayUSA.com
1-800-243-3220
5875 West Van Horn Tavern Rd.
Columbia, MO 65203

AR-STONER Flash Hider A2 1/2"-28 Thread AR-15

★★★★☆ 29 Reviews Write a Review

Product #: 691158 Manufacturer #: A2-FLASH-556

Our Price: $7.99

Available

Ships tomorrow from MidwayUSA

Made in USA

Quantity: 1

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SUGGESTED PRODUCTS

AR-STONER Crush Washer AR-15...

★★★★★ 2 Reviews

$2.49

Add to Cart

AR-STONER Flash Hider A2 5/8"-24...

★★★★½ 17 Reviews

$9.99

Add to Cart

Wilson Combat A2 Birdcage Flash...

★★★★½ 18 Reviews

$8.95

Add to Cart

Product Overview

The AR-STONER™ A2 Flash Hider with 1/2" - 28 threads is an effective option for reducing muzzle flash from AR-15 rifle barrels. This high quality, matte steel, flash hider is ready for installation on your AR-15 rifle.

Note: The use of a crush washer is recommended

EXHIBIT "14"

SECURITY

Violent Crimes Most Likely to Occur At Night

June 14, 2019

When are criminals active during the day? The Crimes at Night: Analyzing Police Incident Reports in Major Cities reveals that violent crimes occur most often at night.

In 2017, an estimated 1,247,321 violent crimes occurred nationwide, a decrease of 0.2 percent from the 2016 estimate, according to FBI data.

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More than half of police incidents took place during the day:

- Larceny/theft, drug violations, simple assaults, and property crimes were slightly more likely to happen while the ... driving while impaired,

murder, rape/sexual assault, and robbery were more frequently reported at night.

Percentage of Police Incident Reports, by Offense Type

Offense	At Night Percentage	During the Day Percentage
DWI/DUI	87%	13%
Murder & Negligent Manslaughter	65%	35%
Rape/Sexual Assault	59%	41%
Robbery	56%	44%
Aggravated Assault	54%	46%
Motor Vehicle Theft	51%	49%
Burglary	50%	50%
Property Crime	48%	52%
Simple Assault	47%	53%
Drug Violation	43%	57%
Larceny/Theft	40%	60%

Police incidents tend to happen between Monday and Friday.

- Friday experienced the highest peak in known crime reports during the day, with an average of 755 police incidents per 10,000 residents. Alternatively, Sunday had the fewest incidents during the day – an average of 595 per every 10,000 individuals.
- When are violent crimes most likely to happen? Unfortunately, midnight was the peak hour for violent crimes like rape and sexual assault, while 2 a.m. was the ideal time to stay off the roads – DWI/DUI police incidents happened the most then.
- Murder peaked at 9 p.m. and aggravated assault peaked just an hour after.

KEYWORDS: crime rates robbery violent crimes

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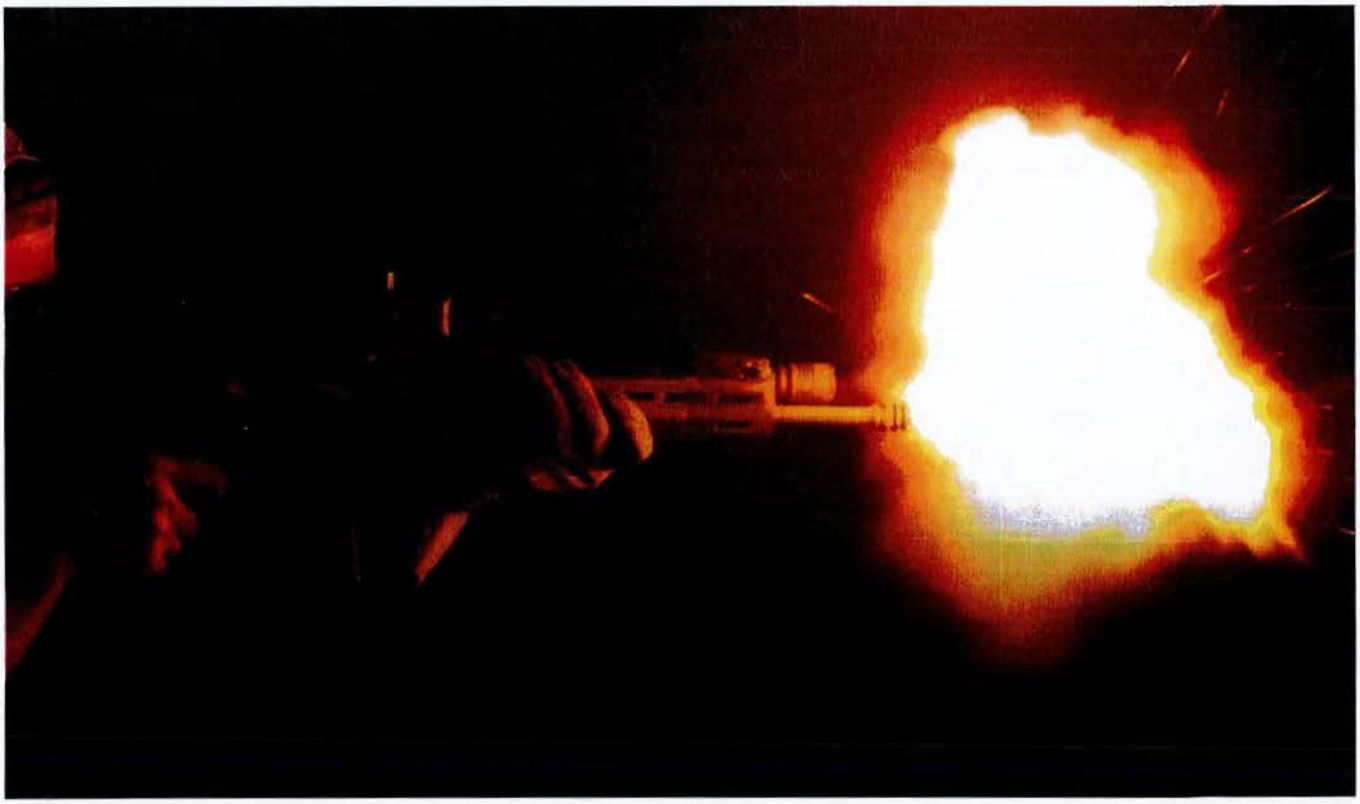
Related Articles

EXHIBIT “15A”

AR15 shot without flash hider.



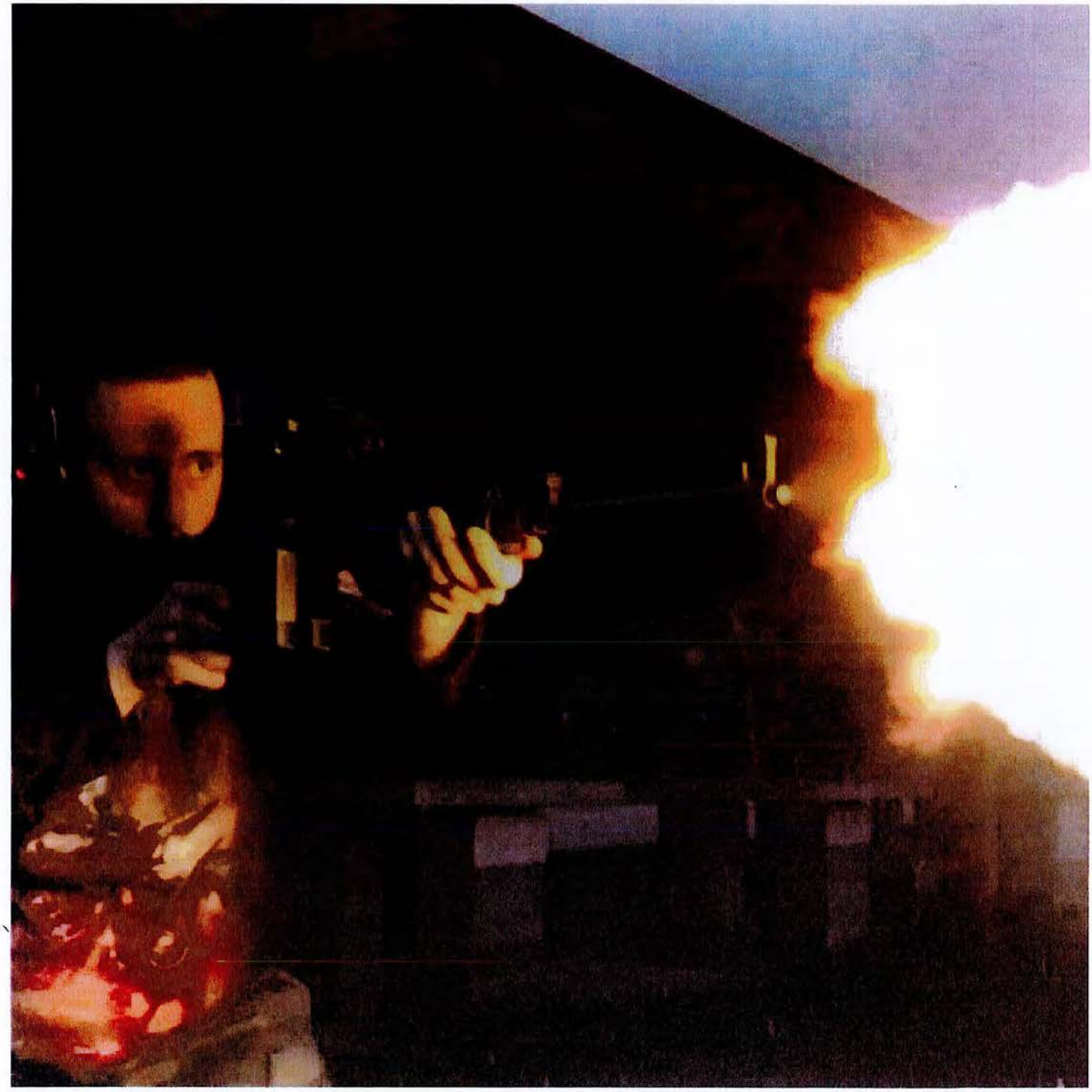


EXHIBIT “15B”

EMANUEL KAPELSOHN - Recent Deposition and Trial Testimony

1. Commonwealth of Pennsylvania v. Jeremy Hamborsky, Court of Common Pleas, Fayette County (2014). Trial Testimony (2014).

2. Estate of Shafer v. City of Elgin, Eric Kilpatrick, et al., U.S.D.C., District of Oregon, Pendleton Division, Case No. 2:12-cv-00407-SU. Trial testimony (2014).

3. Schuoler v. Dupnik, et al., Superior Court, State of Arizona, Pima County, No. C-20140079 Deposition (2014).

4. Leapers, Inc. v. SMTS, LLC, d/b/a TUFF ZONE, et al., U.S. District Court, Eastern District of Michigan, Southern Division, Civ. No. 2:14:cv-12290-RHC-DRG. Deposition testimony (2015).

5. Leone v. Towanda Borough;, et al., U.S. District Court, Middle District of Pennsylvania, Case No. 3:2-AT-06000. Trial testimony (2015).

6. Adams v. Sheriff Ric L. Bradshaw, Palm Beach County Sheriff's Office, U.S. District Court, Southern District of Florida, Case No. 9:14-CV-80403. Deposition (2015).

7. Antoquan Watson Shooting case, Atlantic County MCU Case No. MCU 14-019. Testimony before Atlantic County Grand Jury (2015).

8. Pickett v. City of Chicago, et al., U.S. District Court, Northern District of Illinois, Eastern Division, No. 12C-4118. Deposition (2015).

9. Shaun Brown Shooting. Testimony before Atlantic County Grand Jury (Sept. 29, 2015).

10. Chavez v. Glock, Inc., et al., Superior Court, State of California, County of Los Angeles, Central Division, Case No. BC394135. Deposition (2015).

11. McDonald v. Dupnik, Pima County, et al., Superior Court of State of Arizona, County of Pima, Case No. C20142895. Deposition (2015).

12. Schuoler v. Nanos, et al., Superior Court of State of Arizona, County of Pima, Case No. C20140079. Trial testimony (2015).

13. Commonwealth of Pennsylvania v. Michael Miller, Centre County Court of Common Pleas, Bellefont, PA. Trial testimony (2015).

14. Tremaine Dantzler Shooting. Testimony before Atlantic County Grand Jury (December 10, 2015).

15. Roxette Ojeda v. City of Fort Pierce, et al., Circuit Court, 19th Judicial District, in and for St. Lucie County, FL, Case No: 56:2014-CA-001732 (NS). Deposition (2016).

16. Commonwealth v. John Elliott Torres, York County Court of Common Pleas, No. CP-67-CR-3515-2014. Trial testimony (2016).

17. Commonwealth of Pennsylvania v. Baur, Court of Common Pleas, Philadelphia County, PA, No. CR-10543-2014. Trial testimony (2016).

18. Little v. Academy, Ltd, Bushnell, et al., 334th Judicial District, Harris County, TX, Cause No. 2014-52373. Deposition (2016).

19. Russell Hicks v. Camden County Correctional Facility, New Jersey Office of Administrative Law, OAL Docket No. CSR 13494-2012-S. Hearing testimony (2016).

20. State of Maryland v. James Cooper, Circuit Court, Carroll County, No. 06K15046865. Trial testimony, 2016.

21. State of New Jersey v. Stephen Schweizer, Superior Court, Cape May County, Indictment #15-04-00334-I. Trial testimony (2016).

22. State of Maryland v. Wesley Cagle, Circuit Court, Baltimore City, Case No. 115246012. Trial testimony (2016).

23. Chatman v. City of Chicago, U.S. District Court, Northern District of Illinois, Eastern Division, Case No. 13 CV 5697. Trial testimony (2016).

24. State of Iowa v. Steve W. Fordyce II, District Court, Black Hawk County, Crim. No. FECR208081. Trial testimony (2016).

25. State of Louisiana v. Jody Ledoux, Fourth Judicial District, Parish of Oachita, No. 15-F-000153. Trial testimony (2016).

26. Jones v. Allen, U.S. District Court, District of Maryland, C.A. No. 8:15-cv-01173-GJH. Trial testimony (2016).

27. S.R. Nehad, et al. v. Shelley Zimmerman and City of San Diego, et al., U.S. District Court, Southern District of California, Case No. 15-cv-1386-WQH-NLS. Deposition (2017)

28. Green v. City of Chicago, Circuit Court of Cook County, IL, No. 2013 L 014041. Deposition and trial testimony (2017).

29. Schueller v. Cordrey, et al., Superior Court of the State of Delaware, Case. No.: N14C-10-201 EMD. Trial testimony (February 23, 2017).

30. Pratt v. City of Camden, et al., U.S. District Court, District of New Jersey, Docket No. 1:13-cv-06830-JBS-AMD. Deposition (2017).

31. State of Minnesota v. Yanez, Ramsey County District Court, No. 62-CR-16-8110. Trial testimony (2017).

32. Williamson v. Chicago Police Officer Wilfredo Ortiz, et al., U.S. District Court, Northern District of Illinois, Eastern Division, No. 14 CV 6397. Deposition (2017)

33. State of New Jersey v. Sergio DeRosa, Superior Court, Atlantic County, NJ. Trial testimony (2017)

34. Estate of Angel Lopez v. City of San Diego, U.S. District Court, Southern District of California, Case No. 13cv2240 GPC (MDD). Trial testimony (2017)

35. State of Ohio v. Robert Burry, Lake County Court of Common Pleas. Trial testimony (2017)

36. State of Arizona v. Philip Mitchell Brailsford, Maricopa County Superior Court, No. CR2016-004743-001 DT (2017). Trial testimony (2017)

37. Wallace v. City of Alexander, et al., U.S. District Court, Eastern District of Arkansas, No. 4:13-CV-00748-BRW (2017). Trial testimony (2017).

38. State of Wisconsin v. Devon Kraemer. Circuit Court, Milwaukee County, Criminal Division. Case number 2016-CF-005003. Trial testimony (2018).

39. Mason v. City of Lafayette, et al., U.S. District Court, Western District of Louisiana. Civil Action No. 6:12-CV-02939. Trial testimony (2018)

40. State of Minnesota v. Carl Patrick Anderson, Chisago County District Court, Tenth Judicial District, File No. 13-CR-17-159. Trial testimony (2018)

41. Velazquez v. City of Camden, et al. Superior Court, Camden County, New Jersey. Docket No. CAM-L-1350-10. Trial testimony (re-trial after appeal, 2018).

42. LeGrier v. City of Chicago, et al., Circuit Court, Cook County, Illinois, No. 15 L 12964. Trial testimony (2018).

43. Washington, D.C. Metropolitan Police Trial Board Hearing in Shooting of Terrence Sterling by Police Officer Brian Trainer. Hearing testimony (2018).

44. Michael Rogers v. Trooper Matthew Morgan and State of Delaware, Delaware Superior Court, C.A. No. N15C-07-259 WCC. Trial testimony (2018).

45. Commonwealth of Pennsylvania v. Razawn Moore, Court of Common Pleas, Dauphin County, No. 2228CR2016. Trial testimony (2018).

46. Commonwealth of Pennsylvania v. Stephen Spencer, Court of Common Pleas, Luzerne County, Criminal Division, No. 2491 of 2017. Trial testimony (2018).

47. Cockerham v. City of Chicago, et al., Circuit Court of Cook County, IL, Case No. 16 L 1682. Deposition and trial testimony (December 2018).

48. Siler v. City of Kenosha, et al., U.S. District Court, Eastern District of Wisconsin, Case #17-CV-1324. Deposition (December 2018).

49. Garrit v. City of Chicago, et al., U.S. District Court, Northern District of Illinois, Eastern Division, Case. No. 16-C-7319. Deposition (2019).

50. Commonwealth v. Barbara Rogers, Court of Common Pleas, Monroe County, PA. Docket No. 2045 CR 2017. Trial testimony (March 2019).

51. Stephens v. Ric Bradshaw, Sheriff, Palm Beach County Sheriff's Office, et al., Claims Bill Hearing before Special Masters of the Florida Legislature. Hearing testimony (March 2019).

52. Golatte v. City of Chicago, U.S District Court, Northern District of Illinois, Eastern Division, No. 17 CV 929. Deposition (2019).

53. State of Minnesota v. Mohamed Noor, Hennepin County District Court, Minneapolis, MN, MNCIS No. 27-CR-18-6859. Trial testimony (2019).

54. In the Matter of Charges Filed Against Police Officer Robert Rialmo, Case No. 18 PB 2950 Before the Police Board of the City of Chicago. Hearing testimony (2019).

55. Etheredge v. City of Chicago, et al., Circuit Court, Cook County, Illinois, County Department, Law Division, No. 17 L 2841. Deposition (2019).

56. Commonwealth of Pennsylvania v. Idean Fulton, Court of Common Pleas, Philadelphia County, PA, Docket No. CP-51-CR-0012441-2010. Trial testimony (2019).

57. State of New Hampshire v. Joseph Brown, Superior Court, Grafton County, Docket No. 215-2019-CR-204. Deposition (2020).

58. Commonwealth of Pennsylvania v. Jonathan Robert Roselle, Court of Common Pleas, Lehigh County, PA, Criminal Division, Case No. CR-4106-2018. Trial testimony (2020).

59. Testimony by invitation before the Pennsylvania General Assembly, House Judiciary Committee, hearing on Police Use of Force and Department Accreditation. Sept. 15, 2020.

60. Miller v. Becerra, U.S. District Court, Southern District of California, Case No. 3:19-cv-01537-BEN-JLB. Live and videoconference hearing and trial testimony (2020, 2021).

61. Haywire Outfit v. City of Yakima, et al., Superior Court, State of Washington, Yakima County, Case No. 19-2-01964-39 (deposition, 2020).

62. State of New Hampshire v. Joseph Brown, Superior Court, Grafton County, Docket No. 215-2019-CR-204. Hearing (2021).

63. Sperling v. Clark Rifles, Superior Court, State of Washington, Clark County, No. 16 2 024312, Deposition (2021).

64. Taylor v. Barsony Holsters & Belts, Inc., U.S. District Court, District of Nebraska, No. 8:18-cv-00210. Deposition (2021).

65. Estate of Sean O'Brien v. City of Livingston, et al., U.S. District Court, District of Montana, Billings Division, No. CV-18-106-BLG-SPW-TJC. Trial Testimony (2021).

66. Estate of Sean O'Brien v. City of Livingston, et al., U.S. District Court, District of Montana, Billings Division, No. CV-18-106-BLG-SPW-TJC. Trial Testimony (2021; re-trial after mistrial).

67. State of Mississippi v. Eaton, Circuit Court of Tippah County, Cause No. 2019-068, 2019-133. Trial Testimony (2021).

68. Commonwealth of Kentucky v. Cundiff, Muhlenberg Circuit Court, Case No. 20-CR-00066. Trial Testimony (2021).

69. In re. the Matter of the Welfare of Logan D. Keranen, District Court, Seventh Judicial District of Minnesota, Criminal Division, File No. 03-JV-20-1872. Trial Testimony (2022).

70. Commonwealth of Pennsylvania v. Luis Daniel Ortiz, Court of Common Pleas, Northampton County, Criminal Division. Trial Testimony ((2022)

71. State of West Virginia v. Thomas McCallister, Circuit Court, Cabell County (Huntington), WV. Trial Testimony (2022).

72. Caravana v. On Q Protection and Investigation Services, et al., Circuit Court, Cook County, IL, County Dept., Law Division, No. 19 L 7900. Deposition (2022)

73. Commonwealth of Pennsylvania v. Christopher McKenzie, Court of Common Pleas, Greene County. Trial Testimony (2023).

74. State of New Jersey v. James Ray III, Essex County Superior Court, Indictment 19-0200437, Trial Testimony (2023).

75. Roman v. City of Chicago, et al., U.S. District Court, Northern District of Illinois, Eastern Div., Case No.: 20 CV 01717, Deposition (2023).

76. Coxie v. Academy Ltd. d/b/a Academy Sports and Outdoors, Court of Common Pleas, Seventh Judicial Circuit, State of South Carolina, County of Spartanburg, Civil Action No. 2018-CP-42-04297. Deposition (2023).

Fee Schedule – The Peregrine Corporation – ANJRPC Cases:

The Peregrine Corporation will charge as follows for work in the above-referenced cases:

For case preparation time by Emanuel Kapelsohn:	$400 per hour
For in-transit travel time over 3 hours each way:	$275 per hour
For in-person attendance or participation by Emanuel Kapelsohn at depositions or trials:	$3,750 per 10-hour day or part
For video depositions taken within 20 miles of Allentown, PA:	Charged hourly, at $400/hr.
Paraprofessional Assistant's time:	$85 per hour

Exhibit 14

The Peregrine Corporation

Specialists in Defense Dynamics

July 17, 2023

Daniel J. Schmutter, Esq.
Hartman & Winnicki, P.C.
74 Passaic Street
Ridgewood, NJ 07450

Re.: Reply Report - Ellman, et al. v. Platkin, et al., and Association of New Jersey Rifle & Pistol Clubs, Inc. et al. v. Platkin, et al.

Dear Attorney Schmutter:

I am writing to reply to the reports of the defendants' expert witnesses in the two above-referenced cases, and to supplement my initial report dated June 15, 2023 in these cases.

Preparation. In preparation, I have read the reports of defendants' expert witnesses Randolph Roth, Daniel W. Webster, Dennis Baron, James E. Yurgealitis, Louis Klarevas, Robert J. Spitzer, Saul Cornell, Lucy P. Allen, and Stephen Hargarten. In addition, I have reviewed various research materials in my own library, on the internet, and elsewhere, spoken with several individuals with information on Revolutionary War era arms and accoutrements, visited the Washington Crossing Historic Park and inspected several items in the museum's collection there. The most significant of the sources I researched are cited below.

Additional Details on My Qualifications for Rendering Opinions. In addition to my qualifications, training, experience, and education outlined in my June 15, 2023 report and in my curriculum vitae provided at that time, I would now include the following details, which are of particular relevance in replying to the reports of defendants' expert witnesses:

For many years I have owned and fired black powder, muzzle-loading, flintlock firearms of the same general type in use during the American Revolution, and during the period immediately following the Revolution when the Second Amendment was written and adopted. I also have friends and acquaintances who are "re-enactors" of Revolutionary War and Civil War battles.

I have done many types of ballistic testing for the past 45 years, including accuracy testing, trajectory calculations, velocity measurements using electronic chronographs, firing of projectiles into ballistic gelatin, water, and other media, ricochet studies, and penetration testing by firing projectiles at car windshields and other automotive glass, tempered and laminated safety glass, autobody sheet metal, entire automobiles, steel armor plates of various

specifications, wood, sheetrock, plexiglass, polycarbonate, glass-reinforced plastic, soft body armor, and other materials.

I have been a hunter since my teenage years. I have hunted in New Hampshire, Connecticut, New York, New Jersey, Pennsylvania, Ohio, Indiana, Louisiana, and Alabama. I have hunted deer in five of those states. Among other animals, I have hunted game birds and waterfowl, small game, coyotes and other varmints, deer, bear and wild boar, and have taken animals ranging in size from a few ounces to 1,800 pounds. I have attended hunter safety or hunter education classes in three states. I have worked as an expert witness in hunting accident cases in several states and Canada. I am generally familiar with hunting laws and methods, and the types of firearms and ammunition used for hunting, in many parts of the United States.

I hold a bachelor's degree in English Literature with honors from Yale University. I have authored, edited or helped to edit over 130 published works in the firearms field, including a 348-page work, *Standards & Practices Reference Guide for Law Enforcement Firearms Instructors*, IALEFI 1995, of which I was the Associate Editor and Preston Covey, a professor at Carnegie Mellon University, was Editor. This work is a combination of a glossary of firearms terms, and short articles on key topics. I have been Technical Editor of *Police Marksman* magazine, and have served on the editorial boards of *The Firearms Instructor* and *Special Weapons and Tactics* magazines. Although I do not have the academic credentials in linguistics of defendants' expert Dennis Baron, I believe that my extensive background, training and study in firearms and firearms terminology more than makes up for that when the issue is whether a modern firearm's "magazine" is the "present day analog" of the Revolutionary War soldier's "cartridge box," which is the argument made by Dennis Baron in his expert report.

Discussion and Analysis

Rate of Fire. Throughout the report of defendants' experts, the experts state "rates of fire" of various firearms. For example, on page 16 of his report, Robert Spitzer states that "[a] Tommy gun could fire "an astonishing 1,500 rounds per minute. A Tommy gun could go through a 100-round drum magazine in four seconds. Later versions fired 600 to 700 rounds per minute." Yes, it would indeed be "astonishing" if a Thompson submachine gun could actually fire 1,500 rounds per minute or, for that matter, even 600 to 700 rounds per minute in actual field use, except in an extremely contrived situation. The truth, however, is to the contrary.

The Court should understand that the above numbers are not actual rates of fire of the stated firearms. Instead, the stated rates are the theoretical cyclic rates of fire of the firearms – that is, how fast the mechanism of the firearm cycles from shot to shot, and would therefore, theoretically, fire within one minute given an uninterrupted source of ammunition. For instance, given that our military's M16A1 and A2 rifles had a cyclic rate of fire of approximately 750 rounds per minute, if the trigger were held rearward in the fully automatic mode, the rifle would empty a 30-round magazine in about 2.4 seconds, which is about 12.5 rounds (shots) per second. That is, of course, without any consideration of accuracy or hitting any target. It is simply, as shooters might say, "turning ammunition into noise." If it would then take the infantryman 5 seconds to eject the empty magazine, withdraw a fresh magazine from his magazine pouch, insert the fresh magazine into the rifle, close the rifle's bolt to ready it for firing, and reposition

his hands on the rifle for firing, the actual rate of firing would be 30 rounds in 7.4 seconds. Assuming the infantryman has enough loaded 30-round magazines within easy reach to continue repeating this process at this speed for 60 seconds – which is unlikely – the actual number of rounds fired in that minute would be 243, not the "750 rounds per minute" indicated by the theoretical cyclic rate of fire. And again, even the actual 243 rounds per minute maximum rate of fully automatic fire does not take into account the time it actually takes a shooter to identify a target, aim at it, and press the trigger in a manner that achieves a hit on the target. Moreover, the standard "load-out" for an infantryman with our current 5.56mm M4 rifle (the current version of the M16) is seven 30-round magazines, or 210 rounds. So even the example of firing 243 rounds in 60 seconds is theoretical, not actually achievable by a U.S. infantryman. In addition, some of our issued 5.56mm rifles cannot fire fully-automatically, but have a 3-round burst limitation. In other words, if the trigger is pulled and held to the rear, only three shots will be fired from those rifles until the trigger is released and pulled again, not a continuous stream of shots. This is indicative of the fact that fully-automatic fire against point targets (specific targets) is generally inaccurate, ineffective, and wasteful of ammunition.

The bottom line of this discussion is that cyclic rates of fire given by defendants' experts are of only technical, theoretical interest. In actual use, the firearms cannot be fired that quickly, and if they were fired fully-automatically at all, the result would typically be very inaccurate fire and a quick cessation of the engagement when the shooter exhausts his ammunition supply.

Finally, the Court should understand that the firearms at issue in these lawsuits are not fully automatic firearms at all – they are semi-automatic firearms that fire one shot each time the trigger is pulled once. In order to fire another shot, the user must release the trigger, and pull it again, and so on for each shot fired. Fully automatic weapons – "machine guns" – have been highly regulated by the federal government since the adoption of the National Firearms Act in 1934. New Jersey statutes prohibit the possession of machine guns by private individuals "unless the public safety and welfare so requires." In other words, private possession of machine guns, while permitted in many other states, is basically prohibited in New Jersey. Therefore, the defense experts' citation of the cyclic rates of fully automatic fire for guns discussed in their reports is irrelevant to the issues before the Court, and appears to be simply an attempt at sensationalism.

Revolutionary War Cartridge Boxes Compared to Modern Magazines. Defendants provide the report of Dennis Baron, a linguistics professor. In his report, Mr. Baron goes to great lengths to show that, at the time of the Revolutionary War, a soldier's musket, bayonet, and sword (if he carried one) were called "arms," while the soldier's cartridge box was considered a military "accoutrement," not an "arm." Defendants' expert Saul Cornell makes a similar "accoutrements" argument.

The soldier's cartridge box was a leather pouch, typically measuring about 10" long by 4-1/4" high by 3-1/2" deep, with a wooden insert with holes drilled in it, holding between 18 and 24 tubular paper cartridges, carried on the soldier's belt or by a strap over his shoulder. Mr. Baron's argument is that when the Founding Fathers, in the Second Amendment, provided that "the right of the people to keep and bear Arms, shall not be infringed," they meant to safeguard

the people's right to their muskets and rifles, but not to their cartridge boxes! Putting aside for the moment the absurdity of the argument that the Second Amendment might have given people the right to keep and bear their muskets and rifles for defense of themselves and the nation, but did not give them the right to have the ammunition that would make the muskets and rifles usable, Mr. Baron goes on to make the critical, but fallacious, argument that "the cartridge box [is] the historical analog to magazines." See D. Baron Report at p. 19. Contrary to the professor's argument, however, the modern magazine is not the "analog" of the Revolutionary War soldier's cartridge box.

A firearm's magazine is:

> the part of a firearm containing the reserve ammunition supply, and **out of which cartridges are mechanically fed to the chamber for firing.** (emphasis supplied)

The Illustrated Book of Guns, David Miller, Editor, "Glossary" p. 298 (2004). And see the *Oxford English Dictionary*, which defines "magazine" in sense IV(b) as:

> A container or (detachable) receptacle in a repeating rifle, machine-gun, etc., containing a supply of cartridges **which are fed automatically to the breech.** (emphasis supplied)

This definition is cited by Mr. Baron himself, see D. Baron Report at p. 28.

The New Jersey statute itself defines a "large capacity ammunition magazine" as:

> ... a box, drum, tube or other container which is capable of holding more than 10 rounds of ammunition **to be fed continuously and directly therefrom into a semi-automatic firearm.** (emphasis supplied)

NJS 2C:39-1(y).

The Revolutionary War soldier's cartridge box did not feed cartridges into the chamber of his musket or rifle. Instead, it simply carried the paper cartridges, simplifying the soldier's task of putting powder into the flash pan, and more powder, followed by the musket ball and perhaps several buckshot (see below), into the muzzle – not the chamber -- of the musket or rifle. The cartridge box was, as its name states, simply a box for carrying cartridges.

Firearms magazines take a variety of forms. Some are fixed, integral parts of the firearm, while others are detachable. Examples of fixed magazines include tubular magazines such as those commonly found on pump-action shotguns (e.g., Remington 870 and Mossberg 500/590), some .22 rimfire rifles (e.g., Winchester Model 61 and Henry Classic Lever Action .22), and the iconic lever-action Winchester Model 94 and the Marlin Model 336. There are also fixed box magazines, such as those on the 1903 Springfield rifle used in World War I, the Remington Model 700 ADL bolt-actions, the Soviet SKS rifle, and the U.S. M1 Garand rifle used in World War II. Some fixed box magazines, such as that of the Remington Model 700, are

loaded by hand. Others, such as those of the Springfield and SKS, can be loaded by hand or by use of a "stripper clip." The fixed box magazine of the M1 Garand is loaded with an 8-round "en-bloc clip." All of these fixed magazines, whether tubular or box-shaped, have a spring and follower mechanism that pushes the cartridges into position to be chambered when the pump-action, lever-action, bolt-action, or semi-automatic mechanism of the firearm moves the bolt or breechblock forward into battery for firing.

Detachable box magazines are usually rectangular in shape and, like fixed magazines, contain a spring-and-follower mechanism that pushes the cartridges into feeding position against the feed lips at the top of the magazine. Magazines of this type are generally inserted into what is called the "magazine well" of the firearm, where they are held in place by the magazine catch (or "magazine release," in some manufacturers' terminology). Examples of magazines of this type are the detachable box magazines of the Colt 1911 pistol and its many variants, the Browning P35 Hi-Power, almost all other modern semiautomatic pistols, the Ruger 10/22 rifle (which uses a rotary-design detachable box magazine), the Ruger Mini-14, the Springfield M1A, the AR-15 rifle, the AK-47 rifle, and almost all other modern semiautomatic rifles. Detachable magazine-fed firearms, whether pistols or rifles, are invariably sold by their manufacturers along with at least one, and sometimes two or three, magazines accompanying the firearm. The magazine, while detachable, is considered a part of the firearm. Without the magazine, the firearm could not be operated in its intended manner, and would be relegated to being loaded one cartridge at a time by hand by the user, and firing, at most, a single shot at a time. In fact, some such firearms are extremely difficult or, for some shooters, impossible, to load one cartridge at a time by hand in this way, and many such firearms are damaged if repeatedly loaded and fired this way, rather than in the intended manner using a magazine. Some firearms with detachable box magazines, typically semiautomatic pistols, have what is called a "magazine disconnect" or "magazine safety," and cannot be fired at all with the magazine removed from the firearm. Designed by John Browning shortly after 1900, magazine disconnects have been used in pistols made by Colt, Smith & Wesson, Browning, and other manufacturers, the intended purpose being to prevent the accidents that sometimes occur when ignorant gun users remove the magazine from a pistol, believing they have "unloaded" the pistol, when in fact a round still remains in the pistol's chamber. Pistols of this design make it clear, as do other firearms designs, that the magazine is a critical part of the firearm itself, not the "modern analog of the cartridge box" – a simple pouch for carrying cartridges, to be loaded into the flintlock by hand by the Revolutionary War soldier.

In contrast to a firearm's magazine, which not only contains the firearm's supply of cartridges waiting to be fired, but mechanically feeds the cartridges into the gun's chamber for firing as the action (the moving parts) of the gun operates, a Revolutionary War soldier's "cartridge box" was just that – a box holding cartridges. The cartridge box was not a "part of a firearm." It was just a box, carried on the soldier's belt or by means of a shoulder sling, in which the soldier carried cartridges. The soldier's musket or rifle could be operated without a cartridge box; the soldier could – and some did – carry his cartridges in his pocket, or in some other sort of pouch, or could carry his powder in a powder horn, and his lead musket balls or rifle balls separately. The cartridge box was a more convenient way to carry ready-prepared paper cartridges, and allowed soldiers in formation to have a uniform appearance, but it was not a necessary part of the soldier's musket or rifle.

Unlike the detachable box magazine of the AR-15 or AK-47, that is inserted into the rifle's magazine well and, by means of its spring-loaded magazine follower, elevates each self-contained metallic cartridge into feeding position in the magazine's feed lips so that the reciprocating movement of the rifle's bolt can chamber a fresh cartridge after each shot is fired, the Revolutionary War cartridge box had no such mechanism. In fact, it contained no mechanism at all. At the time of the Revolution, and for many years thereafter, metallic cartridges as we know them today did not exist. Designed to make loading the musket more efficient, cartridges were made of paper, about the weight of newspaper (and in fact newspaper was sometimes used for the purpose), rolled around a wooden dowel into the form of a cylinder or tube. The musket ball (or "buck and ball," see below) was positioned in one end of the tube, which was closed by twisting or folding the paper, or by tying it with a thin string. The tube was tied or twisted off just below the projectile(s) as well, the bottom section of the paper tube was filled with the black powder propellant, and the bottom end of the tube was closed in some manner (twisting, tying, or folding) to hold the powder in the tube. Cartridges of this sort were purchased from ammunition suppliers by the British and American governments for use by their troops, or sometimes the troops would make their own cartridges using paper, string, musket balls, and black powder.

To load his musket, the Revolutionary War soldier would first have to half-cock his musket to allow access to the priming pan. He would then open the leather flap of the cartridge box, then (in many cartridge box models) raise a secondary leather flap designed to protect the cartridges from the rain or snow, and then, using his fingers, pull a paper-wrapped cartridge from one of the holes drilled in the wooden cartridge box insert. The soldier would then tear open the end of the cartridge containing the powder – in battle, usually by biting it off with his teeth – and would pour a small amount of the powder into the musket's priming pan (flash pan), closing a metal piece called the musket's frizzen to keep the priming powder in place. The soldier would then pour the rest of the powder down the musket's muzzle, insert the musket ball (or "buck and ball," see below) into the muzzle -- generally along with the cartridge paper -- and would use the steel ramrod, withdrawn from its holder below the barrel of his musket, to ram the projectile(s), powder and paper down the barrel. The soldier would then replace the ramrod in its position below the musket's barrel.

To fire the musket, the soldier would cock (i.e., pull rearward) the musket's lock holding the flint (these were "flintlock" weapons at the time of the Revolution), aim, and pull the trigger. Pulling the trigger released the spring-loaded lock to rotate forward, bringing the musket's flint into contact with the frizzen. This pushed the frizzen open and resulted in a shower of sparks into the flashpan, sending sparks and flame through the touchhole into the chamber of the barrel to ignite the main powder charge and propel the projectile(s) down the barrel and out the muzzle toward the target. See generally, *Soldier of the American Revolution*, D. Hambucken and B. Payson, p. 26-35 (2011); and *Small Arms and Ammunition in the United States Service*, B. R. Lewis, published by the Smithsonian Institute (1956). A well-trained soldier is said to have been able to fire three or more shots per minute, although two shots per minute appears more likely on average. See, e.g., "Warfare History: Revolutionary War Weapons: The Brown Bess Musket," Warfare History Network, J. G. Bilby, 7/15/23. See generally Exhibit 1 for pictures of Revolutionary War cartridges and cartridge boxes.

Again, the cartridge box was simply a carrying pouch for the soldier's pre-wrapped paper cartridges. It was not a part of the musket or rifle, as a modern magazine is. The cartridge box was not inserted into the firearm like a magazine. It was not inserted into the firearm at all. The modern magazine, usually by its magazine spring and follower, mechanically positions cartridges into position to be chambered when the moving action of the firearm closes. The cartridge box did nothing of the sort. Instead, the soldier removed cartridges from the cartridge box one by one, as he used the cartridges, one by one, to load his musket or rifle by hand.

About the time of the Civil War, paper-wrapped cartridges and muzzle-loaders began to be replaced by breech-loading firearms using self-contained, metallic cartridges. The "modern analog" of the Revolutionary War soldier's cartridge box is not the magazine which, whether fixed or detachable, is a mechanical part of the firearm. The "modern analog" of the Revolutionary War cartridge box is a cartridge pouch, such as those shown in Exhibit 2.

Wounding Capabilities of Revolutionary War vs. Modern Cartridges. In his report, defendants' expert Stephen Hargarten argues, in effect, that the wounding effect and lethality of the modern AR-15 is so greatly out of proportion to that of the muskets known to the Founding Fathers when they wrote the Second Amendment that, had they but known how devastating the AR-15 was, they would never have given the people to right to keep and bear such arms.

Mr. Hargarten's arguments, summarized in the chart entitled "Summary" on the last page of his report, show that his data are inaccurate and his arguments should not be trusted.

His chart begins with three pistol calibers, which he names ".25 Caliber," ".32 Caliber," and ".40 Caliber." As to the first two of these, I note that, assuming he is referring to the .25 Auto (also called .25 ACP, the ACP standing for "Automatic Colt Pistol") and the .32 Auto (or .32 ACP), these are two underpowered, obsolescent pistol calibers, which most firearms experts consider to be inadequate for self-defense use. As to all three pistol calibers included in Mr. Hargarten's chart – the .25, the .32, and the ".40 Caliber" – by which I assume he means to indicate the .40 Auto (also called the .40 S&W) – I note he fails to indicate whether the bullet (projectile) types used for the ballistic gelatin testing were full metal jacketed (FMJ) rounds, jacketed hollow point (JHP) rounds, or some other type. This is significant because the diameter of the temporary cavity, energy lost by bullet while passing through the gelatin, and percentage of energy transferred by the bullet, will all be significantly greater when effectively-performing jacketed hollow points, or other efficient projectile types, are used, compared to full metal jacketed rounds, which produce temporary cavities only modestly larger than their permanent wound cavities.

The biggest problem I have with Mr. Hargarten's chart, however, is the line he entitles "Musket Ball," which he apparently intends the reader to accept as being accurate ballistic data for the musket balls fired in the Revolutionary War, and therefore presumably known to our Founding Fathers when they wrote the Second Amendment. The muskets most commonly used by both sides – that is, the British and the Americans -- in the Revolution were the British "Land Pattern" muskets, popularly known as the "Brown Bess" for reasons which appear to be

historically obscure, and secondarily the French-made Charleville muskets, of which the French gave the American revolutionaries some 25,000 in early 1777. The Brown Bess was nominally a .75 caliber musket (although manufacturing tolerances at that time are said to have varied greatly), while the Charleville was a .69 caliber arm. To allow for efficient ramming home of the musket balls as the musket barrels became fouled with black powder residue in battle, the round lead musket balls used by the troops were often .69 to .71 caliber for the .75 caliber Brown Bess, and .64 caliber for the .69 caliber Charleville muskets.

With that background, we now turn to Mr. Hargarten's chart. On the line titled "Musket Ball," he states the "Bullet Mass" in grams as 3.531 grams. 3.531 grams is 54.49 grains, about the same weight as the most commonly used 5.56mm NATO or .223 Remington ammunition fired in AR-15 rifles. Mr. Hargarten's chart, however, contains, a tremendous understatement of the mass of the musket balls most commonly used in the Revolutionary War. A .69 caliber lead musket ball, the size most often used in the Brown Bess muskets most often used by the colonial troops, weighs about 494 grains – **about nine times the weight of the "musket ball" shown in Mr. Hargarten's chart!** While the exact velocity of a musket ball exiting the muzzle of a Brown Bess musket is a matter of some dispute, and cannot be precisely duplicated today because of the inability to obtain the same gunpowder provided to the troops during the Revolution, velocities in the 800 to 1200 feet per second range seem to represent conservative, knowledgeable estimates. See, e.g., *Range, Power, Penetration, Velocity of a Brown Bess*, N.A. Roberts, J.W. Brown, et al., "Bow vs. Musket, April 29, 2019; *Test Firing Early Modern Small Arms*, P. Krenn, P. Kalaus, et al., "Material Culture and Military History," *Muzzle Loading Shooting*, M. Vickery, W. Terry, et al., (1973); and *Small Arms and Ammunition in the United States Service*, Smithsonian Institute, *supra*. Using 1,000 feet per second as a conservative muzzle velocity for the Brown Bess, the muzzle energy in joules of a 494 grain musket ball would be 1,487 joules. While the correctly input bullet mass would invalidate the rest of the line in Mr. Hargarten's chart, if we presumed, as an example, that 77.1% of the musket ball's energy were transferred to the gelatin (which Mr. Hargarten presents as if this presumably duplicates the percentage of energy that would be transferred to the human body with a hit in some unnamed part of the human anatomy), the "Energy Lost by Bullet While Passing thru Gel" in joules – as shown in the next to last column of Mr. Hargarten's chart – would be 77.1% of 1,487 joules, or 1,146.477 joules, **not the tiny 111.27 joules, similar to that of an anemic .32 ACP bullet!** But this calculation is not accurate, as none of the numbers on that line of Mr. Hargarten's chart are accurate. Given that the entire purpose of this chart is to form the foundation for Mr. Hargarten's argument that the AR-15 is so horrifically more powerful, in joules of energy transferred to the target, than a Revolutionary War musket ball, that the Founding Fathers would never have allowed "the people" to keep and bear AR-15s, Mr. Hargarten's argument has no scientific legs on which to stand.

But it gets worse, for several reasons. First, Revolutionary War soldiers on both sides commonly loaded not just a single round lead musket ball, but topped the ball off with several round lead buckshot pellets, creating a so-called "buck and ball" load of the same type often used 90 years later by both Union and Confederate troops in the Civil War. The buck and ball loads increased the likelihood of hits, and can reasonably be assumed to have increased the lethality of the muskets at the close ranges at which they were commonly used. George Washington is said to have directed the colonial troops to load buck and ball from 1777 forward throughout the

Revolutionary War. The weight of a .33 caliber lead buckshot (size 00 buck) is approximately 54 grains. If the .69 caliber lead musket ball used in a Brown Bess musket was supplemented by three such buckshot pellets clustered on top of it in the paper cartridge, the total weight of the projectiles would be 656 grains, and Mr. Hargarten's chart would be even further from accurate.

See Exhibit 3, attached hereto, for a photograph showing the .69 caliber lead musket ball commonly fired from the Brown Bess, plus three .33 caliber lead buckshot that might be added to the musket ball to make up a "buck and ball" load, compared to the 55-grain, full metal jacketed .223 bullet most commonly fired in an AR-15 or similar rifles.

Finally, Mr. Hargarten fails to take into account the fact that a musket-ball or buckshot wound at the time of the Revolutionary War was far more likely to be fatal, or to have crippling consequences such as amputation of limbs, than a similar wound today, due to the greater effectiveness of emergency medical care today. At the time of the Revolution, there were no antibiotics, and medical care was primitive compared to today. The large, relatively slow musket balls often pulled dirty clothing into the wound with them, causing infection. The inability to restore circulation in limbs after blood vessels were severed often resulted in gangrene, treated by amputation of the limb. Compound fractures of bones often resulted in death.

An article by Dr. Atul Gawande published in the New England Journal of Medicine in 2004 entitled *Casualties of War – Military Care for the Wounded from Iraq and Afghanistan*, presented historical statistics on the lethality of wounds suffered in combat by U.S. soldiers since the Revolutionary War, based on U.S. Department of Defense data. The chart published in that article is attached as Exhibit 4. As shown in the chart, lethality from wounds received by U.S. soldiers during the Revolutionary War was 42%, compared to 30% lethality in World War II, 24% lethality during the Vietnam War, and 10% in our wars in Iraq and Afghanistan from 2001 to 2004, when the article was published. The Founding Fathers, at the time they wrote the Second Amendment, were clearly aware of the grievous effect of the muskets and rifles commonly used in the Revolutionary War which had just recently ended. Mr. Hargarten's argument that the Founding Fathers would never have allowed "the people to keep and bear Arms" if they realized how devastating modern arms might be is not supported by the actualities of medical history.

Misinformation About the 5.56mm/.223 Caliber Round, and Other Topics. Defendants' experts make numerous misstatements about the AR-15's 5.56mm/.223 cartridge, always slanted to make this cartridge appear horrifically devastating, and unsuitable for any legitimate civilian use.

For example, Mr. Yurgealitis states, on page 19 of his report: "Because of the propensity of the 5.56mm/.223 round to create significant damage upon impacting living tissue, it is not generally considered nor favored as a hunting cartridge." See also Yurgealitis Report, p. 50, where he states: "Due to .223 caliber/5/56 mm bullets proven records of causing considerable tissue damage (when fired from an AR type rifle or pistol) it is a counterintuitive choice [for hunting]." Defendants' experts claim that some states ban the 5.56mm/.223 round for big game hunting because it is "too destructive." To the contrary, the truth of the matter is that states that permit rifle hunting for big game, but prohibit the use of the 5.56mm/.223 round

for that purpose, typically do so not because the cartridge is "too destructive," but because they judge it to be ineffective and therefore inhumane as a big game hunting cartridge.

Regarding the destructiveness of this cartridge when fired at living tissue, destructiveness depends on many factors, including not only bullet weight and velocity, but bullet type (e.g., soft point, hollow point, full metal jacket, polycarbonate tipped) and bullet construction (e.g., the thickness and contour of the bullet jacket, etc.). Bullets (projectiles) for the 5.56mm/.223 cartridge range from 36 grain bullets at 3,750 feet per second ("fps") or 40 grain bullets at 3,650 fps muzzle velocity (such as the Fiocchi V-Max), intended for hunting of prairie dogs and other small varmint animals, but also used by some police tactical teams and others to reduce the chance of overpenetration in indoor settings, to bullets weighing 75 grains or more, with muzzle velocities in the 2,750 fps range, used for long-range target shooting and hunting deer-sized game. I note here that the most commonly used 5.56mm/.223 round is the 55 grain full metal jacketed bullet, which typically produces muzzle velocities ranging from about 3,250 feet per second when fired in a 20" barreled rifle, to under 3,000 feet per second from a 16" barrel. By way of further comparison, the 5.56mm/.223 cartridge typically produces about 1,200 to 1,300 foot pounds of energy at the muzzle, while the 165 grain bullet from a .308 Winchester, a cartridge widely used for deer hunting, has twice the muzzle energy, about 2,700 foot pounds.

Another misleading piece of ballistic information concerns the maximum range of the 5.56mm/.223 round (properly termed the "maximum extreme range" to differentiate it from "maximum effective range," which is much less). On page 40 of his report, Mr. Yurgealitis states, "the maximum range of these rifles is 2650-3000 meters. They were not designed, nor are they suitable, for home defense in short range close quarter situations." To get a bullet to travel 3,000 meters (1.86 miles), one would have to point the rifle's barrel up in the air at approximately a 40-degree angle. A lowly .22 rimfire (.22 Long Rifle, like Boy Scouts and other children learn to shoot at summer camp) can travel 1.25 miles or more. Even handgun bullets, such as the 9mm or .45 Auto, have maximum extreme ranges of 1.1 to 1.4 miles. The maximum extreme range of a cartridge is not a reasonable gauge of whether or not it is "suitable for home defense in short range close quarter situations," as Mr. Yurgealitis puts it.

Any of the cartridges commonly used for self-defense can launch bullets into the next neighborhood, or even the next town, if fired up into the air. Hundreds of thousands of soldiers in our military have used 5.56mm/.223 rifles for "short range, close quarter situations" in urban combat and house clearing in Vietnam, Iraq, Afghanistan and elsewhere, and law enforcement agencies nationwide use AR-15 rifles for building entries, for serving search warrants and arrest warrants, and for other self-defense situations at short range, in close quarters. Hundreds of thousands of law-abiding citizens have apparently purchased AR-15 rifles for, among other things, self-defense use in and around their homes, businesses, farms and ranches. Mr. Yurgealitis' opinion should not prevail over the opinions of our military, our law enforcement agencies, and hundreds of thousands of gun owners on what kind of firearms are suitable for defensive use.

Defendants' expert Lucy Allen argues, in effect, that because the "average" self-defensive use of a firearm in which shots are fired requires only 2.2 shots, firearms with

magazine capacities over 10 rounds are unnecessary. I note that even trained law enforcement officers miss with most of the shots they fire in actual deadly-force confrontations. While no determinative figures are available on a nationwide basis, individual large law enforcement agencies that have kept their own statistics often show "hit ratios" by police in the range of only 20-35% in officer-involved shootings, meaning that 65-80% of the shots fired by police miss the suspect entirely. See, e.g., Morrison, G., "Police Handgun Qualification: Practical Measure or Aimless Activity?," *Policing: An International Journal*, Vol. 1, Issue 3, p. 510-533 (1998); Morrison, G., "Latitude in Deadly Force Training: Progress, or Problem," *Police Practice and Research*, 12(4):341-361 (August 2011). The NYPD, the country's largest police department, has had individual years when its officer-involved shooting hit ratio has been as low as 11-15%. (Statistics taken from NYPD SOP9 reports, and NYPD "Analysis of Police Combat Situations.") Firing multiple shots not only increases the chance that the officer will hit the threat altogether, it increases the chance of a hit in an anatomical area that may effectively stop the threat quickly, which is the goal of shooting. Secondly, handgun bullets are notoriously ineffective at causing instant incapacitation of a determined (or drug-crazed, or adrenalin-filled) attacker, so multiple shots are viewed by law enforcement – and by concealed carry and other self-defense handgun instructors -- as more likely to stop the threat before the threat/suspect inflicts deadly damage on the officer, home defender, or other innocent people. I have worked in cases in which trained police officers have hit their attackers with only one or two of the many shots they fired, and other cases in which the fact that a wounded officer's handgun held 15-18 rounds allowed him to keep his attacker from closing with him and, in all likelihood, killing him.

The argument that no private individual "needs" a firearm with a capacity over 10 rounds because the "average" number of shots fired is 2.2 is, in my opinion, like arguing that the fire department doesn't need an aerial ladder that reaches higher than the third floor, because there are "only a few" 4-story buildings in town, or that the police department's SWAT team doesn't need rappelling ropes longer than 100 feet because there are "only a few" structures in town where that length of rope will leave the officer dangling in midair, because he doesn't have enough rope to reach the ground.

During the widespread looting and violent criminal attacks in New Orleans that followed Hurricane Katrina, or the looting, arson, and criminal attacks in cities across the United States following the George Floyd incident in May 2020, when police departments were overtaxed or completely unable to respond, many U.S. city dwellers would have viewed themselves as poorly armed indeed if what they had to defend their homes, businesses, and loved ones from mobs of criminals was a 5-shot revolver of the type recommended by defendants' expert James Yurgealitis for concealed carry, or even the 8-shot revolver he recommends for home defense (see below). And is the private individual supposed to purchase two firearms, one for concealed carry and the other for home defense, as Mr. Yurgealitis' recommendations appear to suggest?

The fact that Lucy Allen says the average number of rounds needed in a self-defense shooting incident is 2.2 – even if true – does not mean that individuals should not have more rounds, even more than 10 rounds, in case their situation is not the "average" one. "Average" means just that; that there are some instances where the number is smaller, and some where the number is larger. No one should be required to stake their life, or the lives of their loved ones, on an academically-derived "average."

In addition, I note that the average number of shots, and maximum number of shots, was for those self-defense shooting instances that were statistically studied. There is no way to know that if additional self-defense incidents were studied, some might not be ones in which over ten rounds were fired by law-abiding individuals defending themselves and their families.

I also note that the data on the number of shots fired in the self-defense incidents studied was taken from newspaper articles. Having worked as an expert in shooting incidents for the past 39 years, I have learned that newspaper articles, and in fact "eyewitness" and "earwitness" accounts, are often extremely inaccurate. I have worked in cases in which: (1) an officer who admitted, immediately after the shooting, that he had fired twice, had in fact not fired at all, the shots having been fired by another officer from a different location; (2) in a public, daytime shooting, witness statements to police of how many shots were fired ranged from less than five shots to a dozen or more; and (3) police officers' accounts of how many shots they have fired, and other details of the shootings, have been grossly inaccurate, often to the detriment of the officer. I have read newspaper articles about how someone "fired both barrels of his pump-action shotgun," whereas the pump-action shotgun has only one barrel, not two. As an expert in shooting scene reconstruction, and an expert witness in shooting cases for nearly four decades, I certainly would not accept newspaper stories for accurate data on how many shots were fired.

Defendants' expert Louis Klarevas states, on page 5 of his report, that "in terms of individual acts of intentional criminal violence, mass shootings presently pose the deadliest threat to the safety of American society in the post-9/11 era ..." While Mr. Klarevas' careful wording of his statement may save it from being an outright untruth, the fact is that tens of thousands of individuals per year are killed by criminals, over 10,000 of them with handguns, while a tiny fraction of that are killed in mass shootings, whether with so-called "assault weapons" or other firearms. For example, FBI statistics show some 20,958 individuals in the United States were homicide victims in 2021, while 103 individuals, excluding the perpetrators, died in active shooter incidents. As stated in an article by the non-partisan Pew Research Center:

> Regardless of the definition being used, fatalities in mass shootings in the U.S. account for a small fraction of all gun murders that occur nationwide each year.

What the Data Says About Gun Deaths in the U.S., John Gramlich, April 26, 2023.

Another opinion appearing from time to time throughout defendants' expert reports is that the 5.56mm/.223 round is inappropriate for home defense because it can penetrate too many walls inside, presumably, the average home. The fact is that a shotgun firing buckshot (recommended by defendants' expert James Yurgealitis, see below), and any of the commonly-used self-defense handgun rounds (including .38 Special, .357 Magnum, 9mm, .40 S&W or .45 ACP), will all go through one or more sheetrock walls, with enough retained energy to cause death or serious bodily injury in the next room, or sometimes even two rooms away. It behooves anyone firing inside a house or office building to know what is on the far side of any wall toward which he or she is firing. Given the low "hit ratio" in actual defensive shootings (see above), the greatest risk to innocent bystanders is not the risk of overpenetration, but the risk that the shooter

will entirely miss what he or she is shooting at. A 5.56mm/.223 projectile properly selected for indoor defensive use, such as a soft point or hollow point of between 40 and 64 grains weight, will have very little likelihood of overpenetrating (exiting) the human body with a solid torso hit. And the likelihood of hitting, rather than missing, is greatly increased by use of an AR-15, any similar rifle, or a pistol caliber carbine, compared to a handgun, as to which see below.

The American Public Should Not Be Required to Accept Mr Yurgealitis' Choice of Firearms for Self-Defense. On pages 49-50 of his report, Mr. Yurgealitis states his opinions about the types of firearms and ammunition he thinks are the best choices for private individuals for self-defense in their homes, and for concealed carry. The simple fact is that many Americans would, and do, make other choices, and when their lives and the lives of their loved ones are at stake, they should not be required to use the firearms and ammunition Mr. Yurgealitis thinks are best.

First, the Court should not equate Mr Yurgealitis' disparaging "spray and pray" comment (Yurgealitis Report, par. 149, p. 49) with the use of an AR-15 rifle, or with a handgun with a magazine capacity over 10 rounds. Someone using a 5-shot revolver can fire recklessly and hit unintended targets, while someone using an AR-15 or a 15-round magazine capacity Glock 19 can fire carefully controlled, precisely-aimed shots. The AR-15 is currently used by literally thousands of law enforcement agencies, including federal agencies, and most law enforcement agencies use handguns with magazine capacities over ten rounds. Certainly most of the officers in those agencies do not engage in a "spray and pray mentality" when using their firearms. Neither is a "spray and pray mentality" taught in any of the many concealed carry and self-defense firearms classes I have attended over the past 45 years.

For self-defense in the home, Mr. Yurgealitis recommends a pump-action shotgun loaded with 00 buckshot. (Yurgealitis Report, par. 150, p. 49) Moreover, he recommends that this shotgun be kept with its safety disengaged, so the homeowner can just pump a round into the chamber and fire it, and will not have to manipulate the safety in a stressful situation. I have personally used, and have trained hundreds of others, including private individuals, law enforcement officers, private security, and military personnel, to use pump-action shotguns over the past 40 years. I have taught nationwide as a contract instructor for O. F. Mossberg & Sons, one of the shotgun manufacturers Mr. Yurgealitis recommends. I have used, and trained others to use, pump-action shotguns in both of the sheriff's departments in which I have served. I have written technical articles evaluating pump-action shotguns, shotgun ammunition, and shotgun techniques. Based on the foregoing, my comments on Mr. Yurgealitis' opinions are as follows:

- The shotgun is too long and too heavy for many homeowners, especially females, to use comfortably and effectively.
- The shotgun has far too much recoil for many users; this leads them to fire it infrequently, with the result that they fail to achieve competence and adequate levels of familiarity and safety with the gun. This has even been true in many law enforcement agencies.
- 00 buckshot, the ammunition choice Mr. Yurgealitis recommends, will pass through several walls of typical house construction. I have demonstrated this many times to my classes of students using constructed sections of

plasterboard wall with 2x4 studs. I can easily demonstrate this to the Court by video.

- Safely storing a loaded shotgun in the home, especially a home which children or others who are not authorized to use the shotgun, is more difficult than safely storing a handgun in a quick-access lock box. In contrast, safely storing the loaded shotgun usually requires a gun safe.
- Pump-action shotguns are not simple to load, unload, or fire, and human errors in performing these functions are common. Stoppages ("malfunctions") of the pump-action shotgun are hard for users to clear, especially under stress. These are among many reasons that some law enforcement agencies have switched to semiautomatic shotguns, and far more agencies have abandoned their shotguns altogether, transitioning to AR-15 rifles instead.
- Keeping shotguns with the hammer dropped and the safety disengaged, as Mr. Yurgealitis recommends, involves the significant danger that once the user chambers a round – which he or she should do in any self-defense situation – they are then holding a single-action weapon with a short, light trigger pull, and no manual safety engaged. In most defensive confrontations, what the defender must do with his or her firearm is not fire it. In other words, most defensive confrontations are resolved without shots being fired. Mr. Yurgealitis' "safety off" method is poorly suited for this. I have personally worked as an expert witness in several cases in which having the safety disengaged on a shotgun has resulted in unintentional deaths, and I know of many others.

Mr. Yurgealitis recommends revolvers for self-defense by private individuals preferring handguns to the shotgun. See Yurgealitis Report, p 49, par. 151. Specifically, he recommends the eight-shot S&W Model 627 or Taurus Model 608, using .357 Magnum or .38 Special +P ammunition. Frankly, these revolvers are much larger and heavier than most private individuals would ever choose to carry concealed for self-defense. As home-defense firearms, I have the following comments about revolvers:

- Both .38 +P and .357 Magnum ammunition will easily penetrate several walls of typical house construction, which is something for which Mr. Yurgealitis criticizes the AR-15.
- Revolvers are considerably harder to shoot accurately than semiautomatic pistols, which is something to which most experienced firearms instructors can attest. This was confirmed by the shooting scores of thousands of law enforcement agencies nationwide when they switched from revolvers to semiautomatic pistols in the 1980's and early 1990's.
- The two revolvers Mr. Yurgealitis recommends have grip sizes and lengths and weights of trigger pull that are well suited to many males, but which are too large or too heavy for many female users.
- If revolvers were as efficient as semiautomatic pistols, why is it that one would struggle to find a single law enforcement agency anywhere in the United States that is still using revolvers as their primary issued service handgun?

On page 50, in paragraph 152 of his report, Mr. Yurgealitis mentions the Sig Sauer P229 in .40 S&W caliber, and the S&W Model 640 in .357 Magnum – handguns he was issued as an ATF Special Agent – in discussing firearms for concealed carry. As to these handguns, my comments are as follows:

- The P229, which I carried on duty in sheriff's department service in Indiana, is much larger and heavier than most private individuals would ever consider for concealed carry.
- The .40 S&W caliber round will penetrate several walls, and can endanger innocent persons two rooms away from the shooter, if the shooter misses his intended target.
- The S&W 640 in .357 Magnum has far more recoil than most shooters can handle competently.
- The recoil of the .357 Magnum in a revolver as small as the S&W 640 makes the gun unpleasant, and even painful, for some shooters to fire, to the extent that they will not practice with it often; this will result in the shooter not becoming adequately competent or safe with this revolver.
- The 5-shot capacity of the S&W Model 640 is minimal, at best, for self-defense. Most private individuals who carry a handgun for self defense will not carry a spare, flat magazine for their semiautomatic pistol, let alone a round, bulky speedloader for their revolver.
- Using a speedloader under the stress of a life and death confrontation is very difficult, and many individuals will not be able to perform it without considerable training and practice. "Considerable training and practice" does not describe most private individuals' use of their self-defense handguns.
- The very short sight radius of the S&W Model 640, and the difficulty of firing a revolver altogether, greatly reduce the accuracy with which this revolver is likely to be fired in a life-or-death confrontation. In a case I just finished working on as an expert, a trained police officer, firing a revolver of this size at an attacker who was only 6-8 feet away from him, hit the attacker in the torso with one shot, hit the attacker in the ear lobe with a second shot, and fired a third shot which missed the attacker completely. The two shots other than the torso hit flew through a public parking garage and toward a busy street, with obvious risk to the public. That was the performance of a trained police officer, not a private individual. A snubnosed-revolver such as the S&W 640 is a poor self-defense choice for most private individuals.
- Mr. Yurgealitis' recommendation of a 5-shot revolver for concealed carry, and a shotgun or 8-shot revolver for home defense, means that to follow his recommendations many homeowners and other private individuals would need to purchase two guns, not just one. This presumes that the cost of buying two guns, buying accessories and ammunition for two guns, and training and practicing with two guns, is no problem, which it very well may be.

The point of all my above comments about Mr. Yurgealitis' recommendations of firearms and ammunition for the American public to use for self-defense, whether in their homes or for any other self-defense use, is not that the Court should accept my opinions rather than

those of Yurgealitis. Rather, it is simply that the Court should understand that individuals have their own particular abilities, needs, physical attributes, budgets, and opinions. The American public should not be limited to the firearms that James Yurgealitis thinks are best. His recommendations may, indeed, be excellent choices for him, but not for someone else.

Conclusion

All of the facts and opinions I have expressed in this report are accurate to a reasonable degree of professional certainty in my fields of expertise.

Very truly yours,

Emanuel Kapelsohn, President

EXHIBIT 1

Paper cartridge, with musket ball and buckshot such as might be contained in it. Collection of Washington Crossing Historic Park.

Revolutionary War cartridge box. Collection of Washington Crossing Historic Park.

Revolutionary War cartridge box with five paper cartridges. From *Soldier of the American Revolution*, D. Hambucken and B. Payson.

Cartridge Box

Revolutionary War re-enactor with musket and cartridge box. Washington Crossing Historic Park.

Revolutionary War re-enactor removes cartridge from cartridge box. Washington Crossing Historic Park.

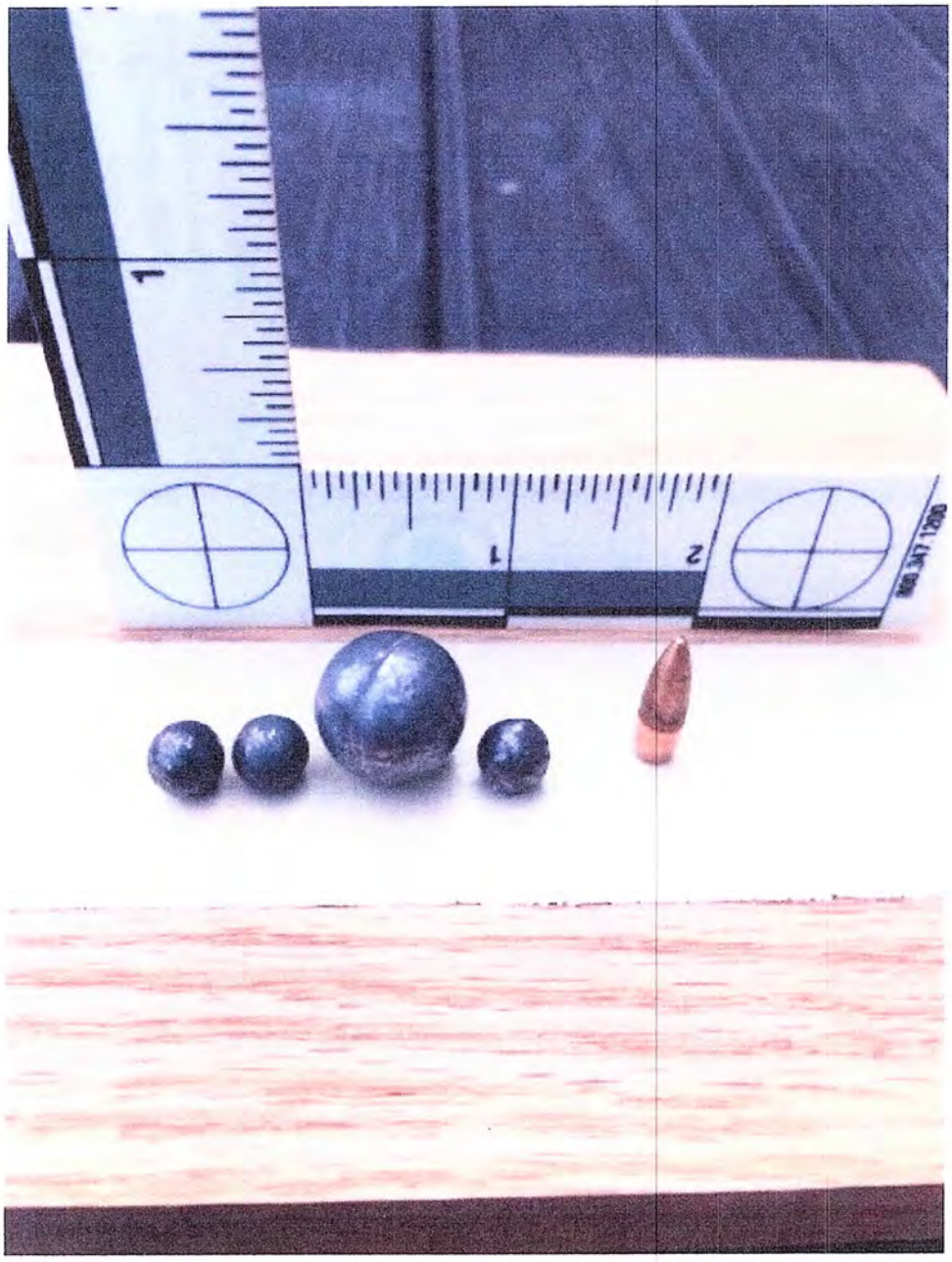
Reproduction Revolutionary War cartridge box with seven paper cartridges. Washington Crossing Historic Park.

EXHIBIT 2

GI-type pouches for 12-gauge shotgun shells.

Modern rifle ammunition belt pouch.

EXHIBIT 3



.69 caliber lead musket ball for Brown Bess, with three lead buckshot for "buck and ball" load, compared to a .223/5.56mm 55-grain full metal jacket bullet.

EXHIBIT 4

Lethality of War Wounds among U.S. Soldiers.*

War	No. Wounded or Killed in Action	No. Killed in Action	Lethality of War Wounds
			%
Revolutionary War, 1775–1783	10,623	4,435	42
War of 1812, 1812–1815	6,765	2,260	33
Mexican War, 1846–1848	5,885	1,733	29
Civil War (Union Force), 1861–1865	422,295	140,414	33
Spanish-American War, 1898	2,047	385	19
World War I, 1917–1918	257,404	53,402	21
World War II, 1941–1945	963,403	291,557	30
Korean War, 1950–1953	137,025	33,741	25
Vietnam War, 1961–1973	200,727	47,424	24
Persian Gulf War, 1990–1991	614	147	24
War in Iraq and Afghanistan, 2001–present	10,369	1,004	10

* Data are from the Department of Defense.[1,3]